

APRIL 1919 ~ No 159

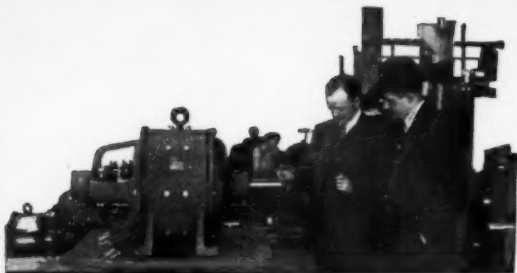
Monthly

A Reference for Buyers

HITCHCOCK'S
**MACHINE
TOOL LIST**

Distributed Free to Machine Tool
Users Everywhere in the United States and to
Dealers in American Machinery Abroad

Published by
A-H-HITCHCOCK
1220-1235 Caxton Building
Chicago



“Yes, the shafts are big”

That's one of the things electrical engineers in large steel mills and machine shops told us they wanted.

We went to thirty-five such users—found out what they needed—came back and built their ideas into the Type T motor.

The result is a more rugged general-service motor that will stand up better under hard knocks in your shops.

Bulletin 2014 tells the whole story

Reliance Electric & Engineering Co.

1050 Ivanhoe Road Cleveland, O.

Branches:

New York

Philadelphia

Pittsburgh

Type T Heavy Duty
RELIANCE MOTORS
Direct Current



Six at a Time

Rapid drilling of small pieces is accomplished on a NAMCO SIX SPINDLE DRILLER by using twelve positions—six pieces are being drilled while six are extracted and replaced.

Production is continuous, with no idle time for machine or operator. Holding grips are furnished for specific work to be drilled.

Capacities up to $\frac{1}{4}$ " drill diameter

Estimates made on your drilling work.

THE NATIONAL ACME CO.

NEW ENGLAND PLANT
WINDSOR, VT.

Cleveland, O.

CANADIAN SCREW PLANT
MONTREAL, P. Q.

Branch Offices:

NEW YORK BOSTON CHICAGO DETROIT ATLANTA SAN FRANCISCO
WAREHOUSES—NEW YORK, CHICAGO With FOREIGN REPRESENTATIVES

Makers of Gridley Single and Multiple Spindle Automatics at Windsor, Vt., and Acme Automatics, Threading Dies and Screw Machine Products at Cleveland, Ohio



***Yearly
Losses
in
Tools
Saved***

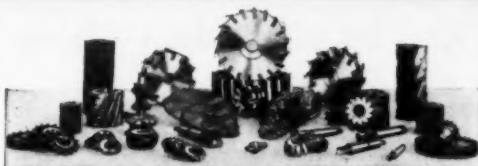
You can write indelibly on steel

even when hardened, just as easy as with
a pencil on paper, by means of

THE ELECTRO-STYLOGRAPH

Very useful for permanent marking of tools,
gages, dies, metallurgical test specimens, etc.

THE ELECTRO-STYLOGRAPH CO.
2 EAST 24TH STREET, NEW YORK



The Right Cutter For Every Job

is merely a matter of selection
from the extensive variety of

Brown & Sharpe Cutters

A half century of experience as extensive users as well
as manufacturers is your assurance of satisfaction.

Besides an extensive line of standard cutters we make
special and formed cutters singly or in gangs in any
practical shape and size.

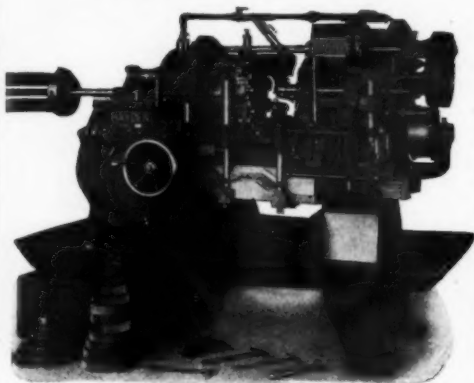
**BROWN & SHARPE MFG. CO.,
PROVIDENCE, R.I., U.S.A.**



*Send for Cutter Catalog
No. 27-S*

A 5-Spindle Money Maker

On Screw Machine Work



The Cincinnati 5-Spindle Automatic

This machine is a money-maker, because it does a mighty big day's work with a low labor-cost for attendance. It turns out a completed piece every $2\frac{1}{2}$ to 36 seconds, according to the character of the work, and one man can take care of three machines.

It has 48 superior and distinctive features, fully described in the Catalog, which will enable the practical mechanic to easily understand why the Cincinnati Automatic is such a big producer of accurate work on the basis of the closest economy.

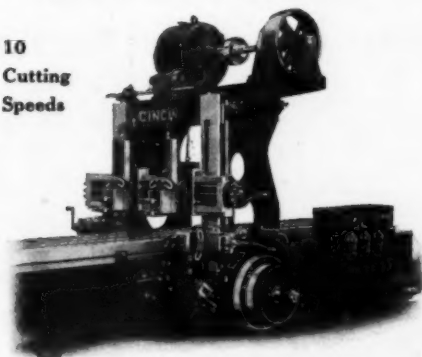
Write for the Catalog; it's instructive

Cincinnati Automatic Machine Co.
Oakley, Cincinnati, Ohio

Cincinnati Planers

**Their Variable Speeds Insure a Larger Output
And a Big Output Means Economy and Profit**

**10
Cutting
Speeds**



Cincinnati Non-Reversible Motor-Driven Planer

You run your shop for profit, of which one essential feature is time-saving and cost-saving, such as you can accomplish on your planing work by using Variable Speed Cincinnati Planers. They are made in a wide range of sizes in the following types:

The Cincinnati Patent Tu-Speed Planer

The Reversible Motor Drive—10 Cutting Speeds

Non-Reversible Motor Drive—10 Cutting Speeds

Send for our book, "Planer Operations," which is full of money-making suggestions, and let us try to get together for our mutual profit. Every Cincinnati Planer makes dollars for our customers where it makes dimes for us.

The Cincinnati Planer Co.

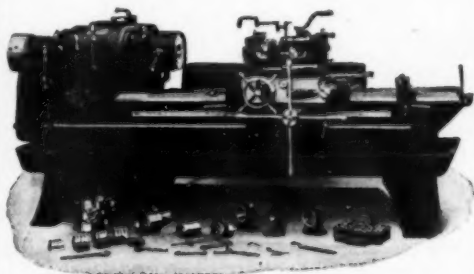
Cincinnati, Ohio, U. S. A.

CINCINNATI-ACME

Flat Turret Lathe

Pleases Proprietor and Operator

The former is tickled because he sees production increasing, with no impairment of quality; the latter because the many conveniences enable him to produce his day's quota with ease and without worry.



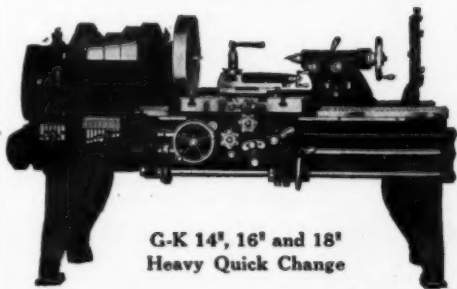
3¼" x 36" Bar Capacity. 16" Chucking Capacity.

The Cincinnati Acme is a favorite with manufacturers. In machining detail parts in quantities it is in a class by itself, increasing output and reducing costs practically in every instance. We shall be glad to send you actual shop records made under average working conditions, so you can judge for yourself.

Writing us for information places you under no obligation whatever—let's hear from you

The Acme Machine Tool Co.
Cincinnati, Ohio, U. S. A.

Engine Lathes—*plus* G-K Betterments



**G-K 14", 16" and 18"
Heavy Quick Change**

IT MEANS that when you buy a Greaves-Klusman you buy unusual lathe value. Our "Betterments" are real—born of long experience and constant care.

G-K LATHES have the power, rigidity, speed and accuracy to help you attain the very peak of production. The 14", 16" and 18" are built with three styles of Headstock:—Four step cone, single back gear; three step cone, friction double back gear; and geared head, single pulley drive. The 20", 22", 24" and 30" are built in two styles:—Three step cone, friction double back gear; and geared head, single pulley drive.

*Full particulars, including details of "Betterments,"
in our Catalog. Your copy is ready.*

The Greaves-Klusman Tool Co.
Cincinnati, Ohio, U. S. A.

So Easy with the Grant Riveter



A Perfect Rivet Every Second with Girl Operator

You obtain a larger output in less time and at less cost. You get any kind of shaped head, and as tight or as loose as you please, without any noise.

No hammer or tool marks on the rivet heads, which are highly polished because shanks are rolled or swaged.

You owe it to your business to at least investigate. Catalog on request.

The Grant Mfg. & Machine Co.
C. E. Station, Bridgeport, Conn.



T. H. L. Punches

Uniform in Size Hardness and Endurance

With the "know how" of long experience, we exercise every care to make T. H. Lewthwaite Punches accurate, uniform and dependable. They not only look like punches, but they ARE punches—the kind you can rely on.

We have a large stock on hand for immediate delivery, and make special sizes quickly—all guaranteed as to strength and accuracy.

Try us; you'll come again

T. H. Lewthwaite Machine Co.
415 East 31st St., New York City

Riveting Revolutionized

"The Hammer with the human stroke"

Heads Rivets Cold



Heads 'em tight or loose, flush, countersunk, or finishes heads any shape desired at the rate of:—

A rivet a second, sizes up to 3-16 in.

A rivet in two seconds, sizes 1-4 to 3-8 in.

A rivet in three seconds, size 7-16 to 5-8 in.

Built in Eight Sizes

Send us sample assembly parts with rivets or sketch of your work, and let US shoulder your riveting problems.

Send for the High Speed Hammer Book

Department 13

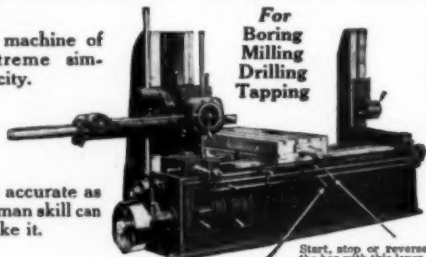
The High Speed Hammer Co., Inc.
Rochester, New York

THE LAMBERT Horizontal Boring Machine

A machine of
extreme sim-
plicity.

For
Boring
Milling
Drilling
Tapping

As accurate as
human skill can
make it.



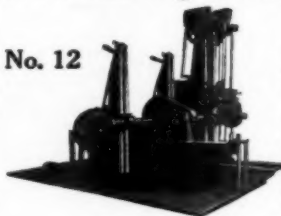
Start, stop or reverse
any feed with this lever

Start, stop or reverse
the bar with this lever.

The Lambert Machine & Engineering Company
Cleveland, Ohio, U. S. A.

P. & H. Drilling and Boring Machine

No. 12



1. Rapid traverse in each direction can readily be manipulated by slight adjustments on the hand wheel.

2. The spindle speeds are obtained by quick change gears and variable speed motor for either A. C. or D. C. current resulting in the following speed variations:

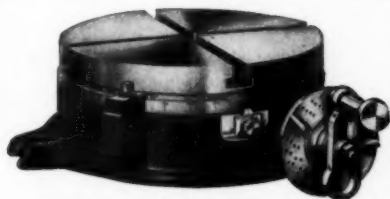
A. C. Current, 12 to 542 R. P. M.

D. C. Current, 10 to 445 R. P. M.

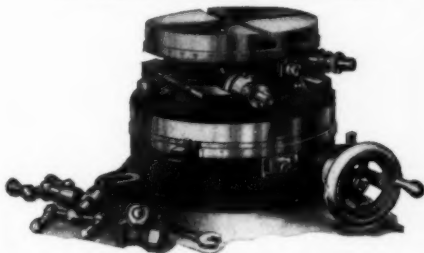
3. The four changes of feed available for each speed are made by the operator without leaving his position near front end of spindle.

Pawling & Harnischfeger Company
Milwaukee, Wisconsin

Cochrane-Bly Co. Circular Tables



12" Plain Table with Dividing Attachment



12" Plain Table and 10" Compound Table with Hand Feed

For use on Milling Machine, Slotter, Planer, Shaper, Drill Press and Boring Mill in the manufacture of Dies, Punches, Jigs, Fixtures, Gauges, Templates, Cams, Formed Cutters, and Miscellaneous Machine Work.

Circular and Prices on Request

Cochrane-Bly Company
Rochester, N. Y., U. S. A.

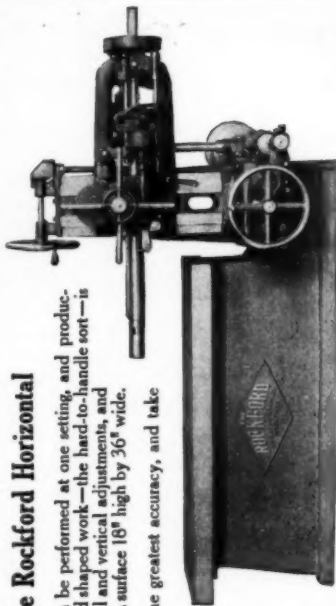
An Unusual Tool—Cuts Costs on Much Work

The Wide Range Rockford Horizontal

A large number of operations can be performed at one setting, and production on all kinds of heavy and odd shaped work—the hard-to-handle sort—is greatly facilitated. Head has lateral and vertical adjustments, and the spindle operates anywhere on a surface 18" high by 36" wide.

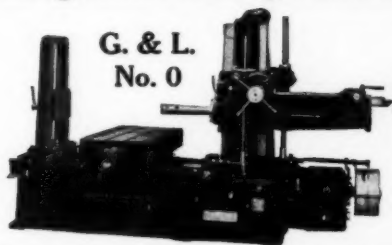
You can drill, bore or tap with the greatest accuracy, and take care of a wide variety of machining at a big saving in time and labor. Drives high speed drills up to 2" and bores up to 6" or over, according to feed used. Construction is high grade and rigid. You have a choice of six driving combinations.

Write for full particulars today



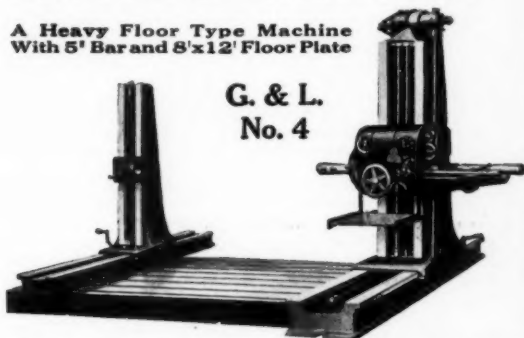
THE ROCKFORD DRILLING MACHINE CO., Rockford, Illinois

G. & L. Horizontal Boring Drilling and Milling Machines



A powerful, rigid tool of great precision, with direct drive, centralized control, steel gearing, phosphor bronze bushings, positive hardened clutches, etc., for heavy work.

**A Heavy Floor Type Machine
With 5' Bar and 8'x12' Floor Plate**



This big tool takes big work which cannot be machined any other way. With necessary fixtures, if work will permit, it will machine all five sides of a casting with one setting.

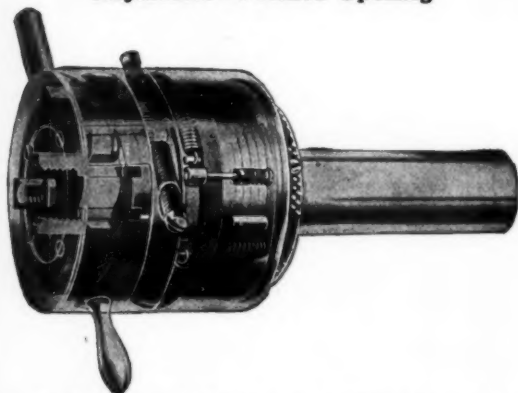
Write for specifications of either machine or both

Giddings & Lewis Manufacturing Co.

Fond du Lac, Wis., U. S. A.

Boehm Automatic Die Head

Adjustable—Positive Opening



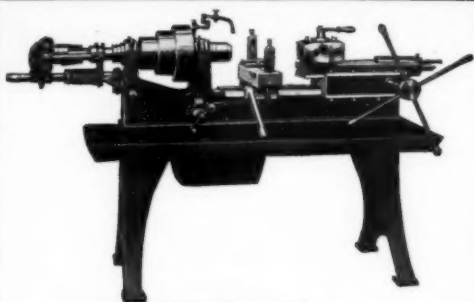
Boehm Automatic Die Heads were designed by men of long experience in this particular field, after an exhaustive study of all similar tools on the market. The result is an Automatic Die Head of extreme simplicity and the greatest efficiency.

The chasers run in hardened ways. The die is carried on two locking pins instead of the usual one, and positive opening mechanism prevents the chasers sticking. The universal taper attachment cam, adjustable for any taper or length of thread, is particularly useful where a variety of threads is required. Our literature describes other highly valuable, practical features.

In many a shop "Boehm" production has meant a largely increased output, a big reduction in cost, and the practical elimination of spoiled work. We would like to show you what it will do for *you*. The harder the work the better it will compare with any other threading method or device.

Write for complete description and tell us about your work

Rickert-Shafer Co., 1110 Cherry St., Erie, Pa.



MODEL "D"

Turret Lathes and Screw Machines

Now Ready for Delivery

**Designed for Rapid Manufacturing of
Parts Requiring Several Operations**

MADE IN FOUR SIZES:

- No. 2 { $1\frac{1}{8}$ " Wire Feed Capacity, Plain Head
 { $1\frac{9}{32}$ " Hole Through Spindle.
- No. 3 { $1\frac{5}{8}$ " Wire Feed Capacity, Plain Head
 { $1\frac{11}{32}$ " Hole Through Spindle.
- No. 4 { $1\frac{7}{8}$ " Wire Feed Capacity, Geared Head
 { $2\frac{1}{32}$ " Hole Through Spindle.
- No. 5 { $1\frac{7}{8}$ " Wire Feed Capacity, Geared Head
 { $2\frac{9}{32}$ " Hole Through Spindle.

**With or Without Power Feed to Turret Slide.
Mechanically Perfect and Fully Guaranteed.**

Manufactured By

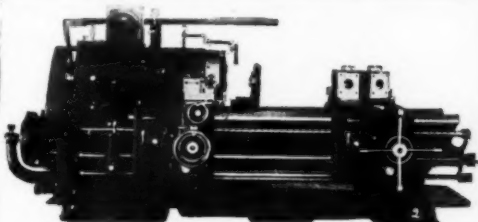
Smurr & Kamen Company

328-330 N. Albany Ave., Chicago, Ill.

STEINLE TURRET MACHINE CO.

MADISON, WISCONSIN

Originators of the Heavy Duty Full Swing Side Carriage Turret Lathe



Steinle 24" Full Swing Side Carriage Turret Lathe

Machine is regularly furnished belt driven or arranged for motor drive.

Actual swing over ways.....	24"
Swing over side carriage.....	21"
Diameter of hole through spindle.....	4" or 6 1/4"
Traverse of side carriage and of turret carriage	56"

Both carriages have independent quick change feed and independent power traverse all controlled from carriage aprons.

Side carriage can be run past the chuck and is equipped with cross slide having power cross feed and with turret tool block having four tool holders.

There are thirty reversible spindle speeds available. One belt or one motor furnishes power for all functions of the machine.

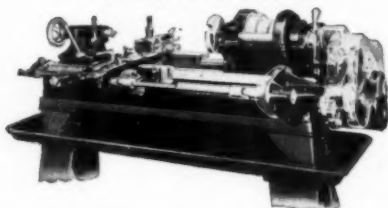
Turret is massive and designed particularly with a view to rigid support of tool equipment.

Send us drawings of gas engine fly wheels, cylinders where cast singly, pistons, and piston rings. Let us give you production estimates and the cost of tool equipment for these and other pieces and also let us tell you the time required to change the tool settings for the different pieces.

Numerous repeat orders received from many of the principal manufacturers of tractors, trucks, aviation motors, marine gas engines, and stationary engines demonstrate the satisfactory results obtained from the use of our machines.

Mulliner Quick Change Lathe

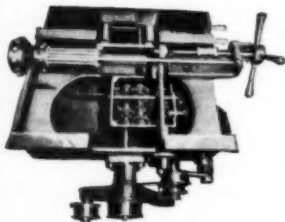
For the Tool Room



It has the rigidity, accuracy and convenience which make it an ideal machine for the tool room. Write for specifications and sizes.

Mulliner-Enlund Tool Co., Inc.
Syracuse, N. Y.

New Gear Feed for Jones & Lamson Friction Feed Turret Lathes



If your J. & L. Friction Feed Turret Lathes are not giving the desired production, don't discard them, but equip them with our Special Gear Feed.

Repeat Orders

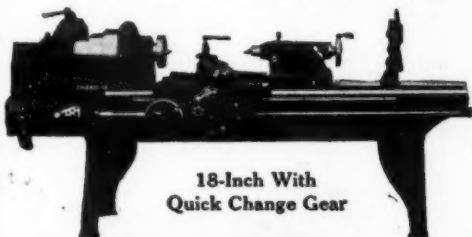
give us most of our business, which is good evidence of satisfaction. Easy to install, or we will install at cost and make any desired repairs on your J. & L. Turrets.

Why not bring them up to date at light cost ?

A. V. Wiggins & Co., Dept. H
384 W. Fayette St., Syracuse, N. Y.

From Bed to Countershaft

The "Chard" Shows Super-Quality



18-Inch With
Quick Change Gear

Made in Sizes 16", 18", 20", 24" and 28"

A nation is as good as its people; a lathe, as good as its parts. From the heavy, stiff bed, with its densified ways to maintain perfect alignment, and from the specially constructed massive headstock to the two-speed double-friction countershaft, with roller bearings in friction pulleys and boxes, there is not an item of design or construction in which we have not given the cream of our experience of 35 years in building high-grade lathes.

And as a result of that same experience, all parts are so proportioned and related as to make a symmetrical and highly efficient tool, and each part is so accurately machined and fitted to exact and invariable standards that the whole machine is interchangeable.

*The specifications go into this in detail
Will you send for them and look them over?*

Chard Lathe Company

Newcastle, Ind.

DOMESTIC DISTRIBUTORS

THE F. O. STALLMAN SUPPLY CO., San Francisco, Cal.
VONNEGUT MACHINERY CO., Indianapolis, Ind.
ENGLISH & MILLER MACHINERY CO., Detroit, Mich.
OGDEN R. ADAMS, Rochester, N. Y.
THE W. M. PATTISON SUPPLY CO., Cleveland, Ohio.
J. S. MILLER MACHINERY CO., Pittsburgh, Pa.
MONARCH MACHINERY CO., Philadelphia, Pa.
DALE-BREWSTER CO., Chicago and New York.

Monarch Lathes

give universal satisfaction to the user. They have been doing this for years, and this accounts for the ever increasing demand for **Monarch Lathes.** Built in all styles and with any attachments desired.

Sizes 10 to 30-inch Swing

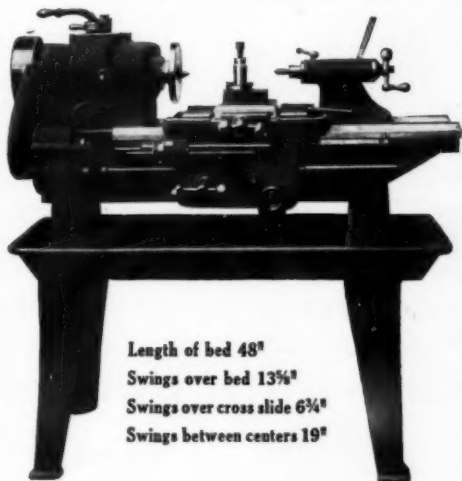
Sold by a leading Machinery Dealer in every machinery center.



The Monarch Machine Tool Co., Sidney, Ohio

Adams Short-Cut Lathe

For Rapid Production of Short Parts



Length of bed 48"

Swings over bed 13 $\frac{1}{2}$ "

Swings over cross slide 6 $\frac{3}{4}$ "

Swings between centers 19"

This highly efficient machine takes only 4' 6" x 2' 4" of floor space. It is especially designed for the quantity production of duplicate parts of short lengths and of comparatively small diameters. The tailstock can be brought right up to the headstock, which permits the turning of extremely short work. It is simple in design, flexible in operation, and a big producer.

*It is high grade in every particular
Write for the complete description*

O. R. Adams Manufacturing Co., Inc.
Rochester, N. Y.

Manufacturers Like Sidneys

They Aid Production and Profits

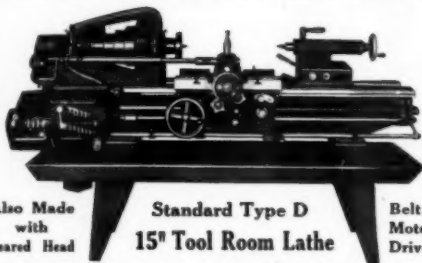


15", 17" and 19" ; S. or D. B. G. ; Plain or Q. C. G. ; Beds 6' Up

Sidney Lathes are dependable for the exacting work of the tool room, and the quantity demands of the shop. Their rigidity and solid build enables them to stand up to the heaviest grind. Furnished with or without accessories. Give us an opportunity of sending full specifications before you buy.

THE SIDNEY TOOL CO., SIDNEY, OHIO

Crawford Lathes



Also Made
with
Geared Head

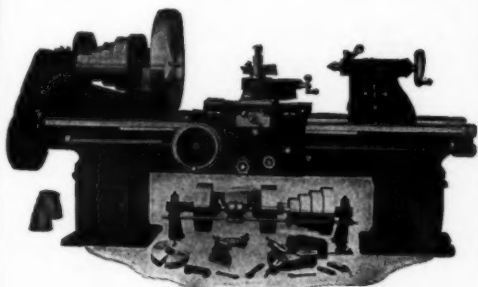
Standard Type D
15" Tool Room Lathe

Belt or
Motor
Drive

Made for a discriminating trade and to give satisfaction under the most exacting conditions.

Crawford Machine Tool Co., Inc.
21 Park Row, New York

South Bend Lathe



24 in.x10 ft. Screw Cutting Engine Lathe.

South Bend Lathes are made in six sizes—13", 15", 16", 18", 21" and 24" swing, with beds from 4' to 16' in length. Furnished with either straight or gap bed.

South Bend Lathes have been on the market thirteen years. Over 20,000 in use. Dealers in every large city.

Reasonable Price Lathes

Send for free Catalog illustrating and describing entire line

South Bend Lathe Works

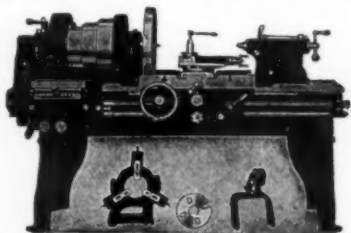
Established 1906

South Bend, Ind.

East End

The 18" Heavy Duty Mueller Lathe

Is a Machine That Is Worthy of Investigation



Write for further particulars, and let us convince you of the worth of this Lathe

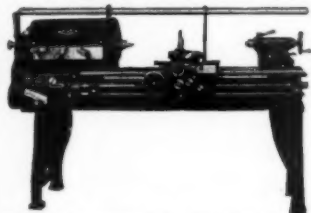
THE MUELLER MACHINE TOOL CO., Cincinnati, O.

Radial Drills and Lathes

Established 1902

"Filsmith" has extra power

And also embodies new features



14" Swing
Q. C. Gear Box
And 12-Speed
Ball Bearing
Geared Head

The new features are the kind that help to increase production. Extreme care and best of materials are used in building the "Filsmith," making it a reliable and economical tool for any shop.

Let us mail you the full particulars.

PHILIP SMITH MFG. CO., SIDNEY, O.

"Worcesters" Make Good

**Built Right, They Never Fail to Give
Thoroughly Dependable Service**



**We specialize on 11", 13" and 16" sizes
Cone or geared head, pulley or motor drive**

We have been building Lathes for many years, and it is not only a matter of profit, but also of pride for us to make them so that users shall be satisfied in every way with a "Worcester." Every detail has had attention—all cylindrical surfaces are ground, and all flat wearing surfaces are scraped to plates. The illustration shows the 11" "Worcester" with compound rest and power cross feed.

If you want GOOD small Lathes—write us

Worcester Lathe Company

68 Prescott St.,

Worcester, Mass.

Prevent Accidents By Using
Allen Safety Set Screws

Any Length, Point or Thread



Allen Socket Cap Screws

Are neat in appearance,
 with uniform threads and
 clean socket holes, and
 they are 30% stronger.



Write for free samples *BEFORE* the accident

ALLEN MFG. CO., - Hartford, Conn.



Straight Shank Turning Tool



Boring Tool



Straight Shank Cut-off Tool

**Armstrong
 Tool Holders**

Make One Pound
 of High Speed Steel
 go as far as Ten
 Pounds in Forged
 Tools.

Grand Prize Winners at
 Panama-Pacific Exposition.

Complete Catalog Free.



Armstrong Bros. Tool Co.

"The Tool Holder People"

308 N. Francisco Ave., Chicago, U. S. A.

"THE SMALL LATHE FOR THE BIG JOB"

"DALTON SIX"

**METAL WORKING
LATHE**

Actual Swing 7 1/2 Inches

MODEL TYPE "B-4"

30 OR 36 INCH LENGTH OF BED



Standard Machine
Mounted with Standard
Type High Legs



Taper Attachment Fits
Any of our Machines



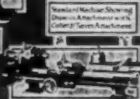
Standard Machine
Mounted with Cabinet
Type High Legs



Standard Bench Machine
Mounted with
Motor Drive



Standard Bench Type



Standard Machine Showing
Draw-in Attachment with
Cabinet Type Attachment



Standard Machine, High
Legs, with Wheel and
Lever Type Tail Stock



Motor-Driven Machine
with Cabinet High Leg
Showing Tailstock Mount



MANUFACTURED BY
DALTON MANUFACTURING CORPORATION
NEW YORK, U.S.A. CABLE ADDRESS "ALEDAL" NEW YORK

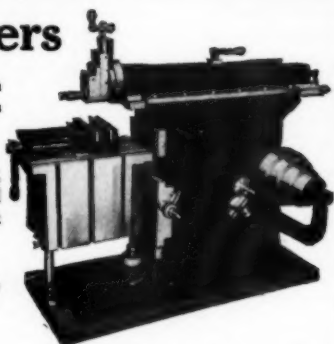
COMPLETE BULLETINS SENT ON REQUEST

Shapers

The best medium priced Shaper on the market.

Built in 16", 18", and 24" sizes, all back geared crank machines.

A few for early delivery.

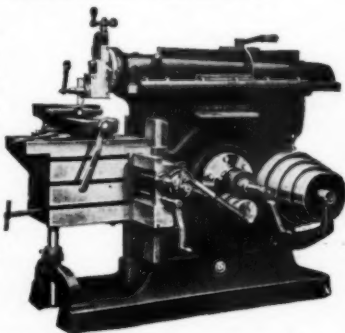


The Osborne & Sexton Mchy. Co.
Columbus, Ohio

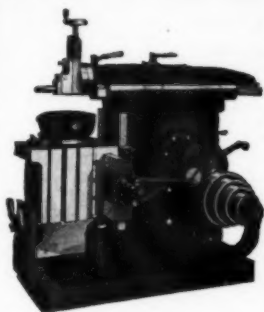
SHAPERS

12", 14", 16"
Plain Crank,
16", 20", 25"
B. G. Crank,
either Cone
Driven or
through
Speed Box.

28" and 32"
Back Gear-
ed Crank,
Single Pul-
ley Drive.



The Smith & Mills Co. Station B.,
Cincinnati, O., U.S.A.



Step toe Shapers *and* Millers

are the product of seventy-three years
of experience in the manufacture of

High Grade Machine Tools

Thousands of our machines in shops
giving daily satisfaction are a recom-
mendation for our product which should
not be overlooked
when buying shapers
and milling machines.

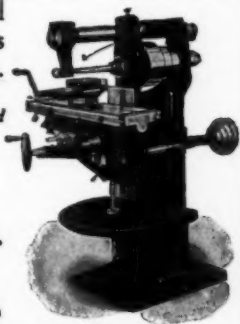
*We will be glad to send
catalogues on request*

—The—

John Steptoe Co.

Stock Yards Station

Cincinnati, Ohio



**For the faster and more accurate
reduction of stock to circular form**



The Etna Rotary Swager

For pointing, tapering or reducing stock to circular form within limits of a few thousandths of an inch.

Strikes 3,000 or more powerful blows a minute with a pair of grooved dies, often multiplying production 500 to 1,000 per cent over power hammers.

The regular sizes swage $\frac{1}{4}$ " to $4\frac{1}{2}$ " diameter. Special sizes to order within reasonable limits.

Write for Catalog, which shows actual production records.

The Etna Manufacturing Co., TOLEDO, OHIO

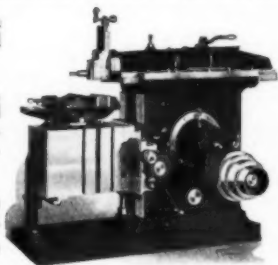
COLUMBIA HEAVY DUTY SHAPERS

**Accurate within
.001" in vise and
table alignment.**

Modern equipment,
careful machining and
fitting, and close inspection,
insure a high standard
of workmanship.

**You can depend on
Columbia Shapers.**

Sizes 16, 20, 24 and 28"



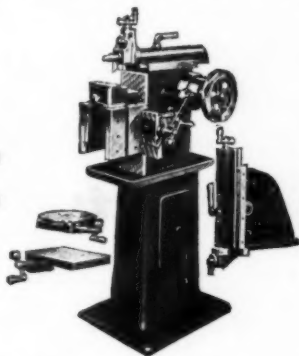
Write us for details

**The Columbia Machine Tool Company
Hamilton, Ohio**

Small Tools of Great Worth

**Rhodes Shapers Save the Cost and the
Floor Space of the Larger Machines**

**Save
Time**



**Save
Space**

"SMALL BUT MIGHTY"—as mighty in essential features as the larger machines— as accurate, as convenient, and fully as speedy. They meet the most exacting tool room requirements and have no equal for small work, including all kinds of dies and tools.

**Rhodes } 7½" Horizontal } In Combination
Shapers } 3½" Vertical } Or Separate**

It's a patented combination that makes either of the above quickly available for every sort of shaping and slotting. Furnished in both the floor and bench type.

If interested in economy send for the specifications

Rhodes Mfg. Company
Hartford, Conn.

We Do Not Claim

B-G CASE HARDENING COMPOUND

To Be BETTER Than Cyanide

WE DO CLAIM THAT IT IS EQUALLY

**SATISFACTORY &
MUCH CHEAPER**

You will agree with us when you try it

LUMP OR POWDERED FORM

Write for Booklet

Bell & Gossett Co.

613 West 30th St., Chicago, Illinois

Phone: Boulevard 2067

Case Hardo

The Ideal Quick Case Hardening Compound

Eliminates dangers of operator being overcome by poisonous fumes.

Hardens quicker, cleaner and deeper than other agents.

Used the same as other agents, but at much lower heat.

The efficiency of CASE HARDO is fully guaranteed.

Write for information and prices

Manufactured Only By

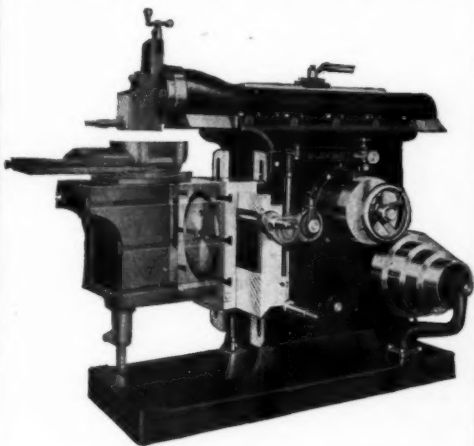
The Thos. Buchanan Company

29 W. 3rd St.,

Cincinnati, Ohio

Established 1886

Milwaukee Shapers



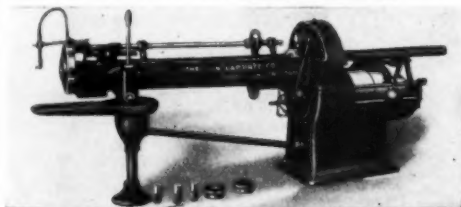
MILWAUKEE Back-Geared
Crank Shapers are built in
16-in., 20-in. and 24-in. sizes.

UNEXCELLED in Rigidity,
Accuracy, Power, Production
and Simplicity.

Milwaukee Shaper Co.

1144-1146-1148 Holton St., 518 Prairie St.,
Milwaukee, Wisconsin

This is only one of the
11 TYPES — 5 SIZES
 Ask for a complete catalog



J.N. LAPOINTE CO.
 NEW LONDON, CONN.

Makers of Broaching Machines and Broaches.

Heavy Duty Universal Joints

$\frac{1}{2}$, $\frac{3}{4}$, 1, $1\frac{1}{4}$, $1\frac{1}{2}$, $1\frac{3}{4}$, $2\frac{1}{4}$ and $2\frac{1}{2}$ in.



The "Giant"

Efficient to an
 angle of 45
 Degrees

Vanderbeek
 Universal
 Ball Joints
 for higher
 angle drives

Giant Universal Joints are giving perfect service on thousands of heavy, fast machines. Wearing contacts are hardened steel; stem ends are strong and well braced. Self-oiling and enclosed against dirt—just put them on and they take care of themselves. Try them once—that's all.

Ainslie Machine & Tool Works

Successors to Vanderbeek Tool Works
 HARTFORD, CONN.

Thor Universal Electric Drills

Licensed Under Burke Universal Motor Patent

Attach To Nearest Lamp Socket

Used for all kinds of Drilling, Reaming and Wood Boring in the building of Automobiles, Steel and Wood Cars, Boilers, Auto Bodies, and in Railroad and Structural Shops, Ship and Dry Dock Work and for Machinery Repairs.

Also equipped with motor wound exclusively for

Direct Current



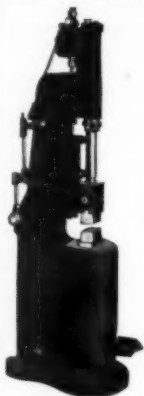
No. 00

5/16 Inch
Drilling Capacity

Jacobs Chucks furnished as regular equipment.

Independent Pneumatic Tool Company

Chicago New York Pittsburgh Cleveland
Detroit San Francisco Birmingham Montreal



It's Portable

The Barr Pneumatic Hammer

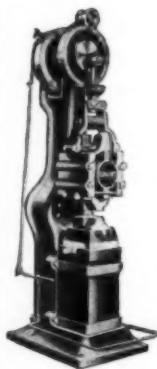
Is recognized today by progressive shop men as the ideal light power hammer!

A tool which should be in every up-to-date shop and tool room. A tool which repays its cost in short order and which you will truly appreciate every day you own it.

Expertly designed—exceptionally well built—simple—economical and dependable. Installed just where you want it, without expense of foundation, belts, shafting or motors.

Readily moved right to the job inside or outside.

Write for Bulletin 10H.



Fairbanks Hammers

25 to 300 lbs.

Belt or Motor Drive

**These Hammers Embody
a Design and Workman-
ship that are Unsurpassed.**

Send for Catalog

United Hammer Co.

Oliver Building, Boston, Mass.

SALES AGENTS

The Fairbanks Company—Albany, Baltimore, Boston, Bridgeport, Buffalo, Chicago, Hartford, Newark, New Orleans, New York, Philadelphia, Pittsburgh, Providence, St. Louis, Syracuse, Havana, London, Glasgow, Paris.

Our Pipe Benders Meet The Demand



Ever since their invention our hand Pipe Benders have had a steady sale and have given universal satisfaction.

Recently, we have made some improved attachments that permit of a wider range of work and open up a new field in the kind of bending the machine will accomplish.

If you do pipe bending you will find our machine an economical, simple and very efficient appliance in reducing costs and doing better work. For 2" and under.

We have a Bulletin waiting for you. Send for it now.

Pedrick Tool & Machine Co.

3644 N. Lawrence St., Philadelphia, Pa.

Manufacturers of Cylinder Boring Bars, Portable Millers, Crank Pin Turning Machines, etc.

Draw-in and Thrust Chucks

for Tool Room Lathes and Screw Machines. Look for the name "Hardinge Brothers" and write us. And did you ever ask us to make those—

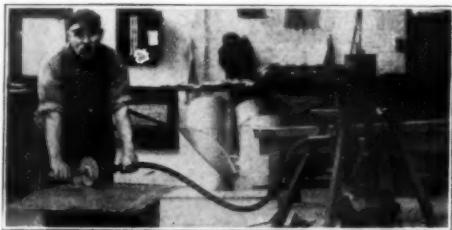
Screw Machine Collets

with regular or irregular holes? We are prepared to make good deliveries. Why not try us next time? Quantities never too small or too large to interest us.

When making inquiry, kindly refer to "Chuck Department"

Hardinge Brothers, Inc.
Chicago, Ill.

So Handy—Stow Flexible Shaft Saves Much Time



The efficiency of your machine shop or tool room will be increased by the use of a Stow Flexible Shaft. It also speeds repairs because you can grind, drill, tap, ream, polish and do many other things without moving the work to a machine. Soon earns its moderate cost. Write us.

Stow Flexible Shaft Company
26th & Callowhill Sts., Philadelphia, Pa.

Modern Methods for Quick Work



A DAVIS KEYSEATER

Motor driven, will save you valuable space as well as increase your production. It is an investment you can't afford to overlook.

Write for Circular

DAVIS MACHINE TOOL CO., Inc.
ROCHESTER, N. Y., U. S. A.

The Tool you will eventually use

The National Keyseating Miller

*For Full Particulars
Write for Catalog O*

National Machine Tool Co.

2266 Spring Grove Ave., Cincinnati, O.



Ever-Ready and Reliable

Anderson Balancing Ways are Used for Cutter Heads, Crank Shafts, Airplane Motors, Propellers, Polishing Wheels, Cones, Pulleys, Gin Brushes, Armatures, Rotars for Turbines, Etc.



They are always dependable. The rotating discs are made of chilled iron, ground true on face and perfectly balanced. They run in especially designed ball bearings and are extremely sensitive. Made in several sizes.

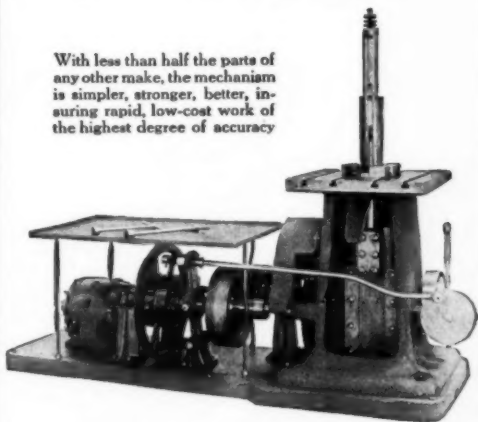
Speeds work in any shop. Particulars and prices?

Anderson Bros. Mfg. Co.
115 Morgan St., Rockford, Ill.

The Catlin Key-seater

Is Simpler and Faster
More Accurate and Durable

With less than half the parts of any other make, the mechanism is simpler, stronger, better, insuring rapid, low-cost work of the highest degree of accuracy



Who use it: Government shops, automobile factories, navy yards, and all classes of machine shops everywhere. Among recent buyers are such concerns as the Tampa Shipbuilding & Engineering Co., Tampa, Fla., Los Angeles Shipbuilding & Dry Dock Co., San Pedro, Cal.; Morse Dry Dock & Repair Co., Brooklyn.

What it does: In ordinary shop practice, without any effort at record making, it has cut a key-seat 10" long, $1\frac{1}{2}$ " wide and 7-16" deep in three minutes through a cast iron hub. Again, key-seats $2\frac{1}{2}$ " long, $\frac{1}{2}$ " wide and $\frac{1}{4}$ " deep were cut in 20 mitre gears 8" long in 20 minutes. It makes any number of duplicate key-seats, accurate to the thousandth of an inch, without stopping the machine.

You'd better have full description; glad to send it

Chattanooga Machinery Company
Chattanooga, Tenn.

Drilling Machines

For Bench Use

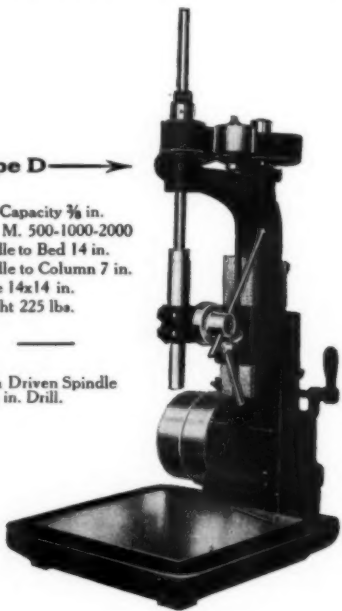
Hand and Power Feed

Gear Driven

Type D →

Drill Capacity $\frac{3}{8}$ in.
R. P. M. 500-1000-2000
Spindle to Bed 14 in.
Spindle to Column 7 in.
Table 14x14 in.
Weight 225 lbs.

Chain Driven Spindle
for $\frac{3}{4}$ in. Drill.



The Taylor & Fenn Co.
Hartford, Conn.

**For Speedier Light Drilling
and Tapping**

Hammond High-Speed Sensitive Radial Drills

*Write and find out how you can cut your
light drilling and tapping costs 25% to 33%*



The Hammond Mfg. Co.
Cleveland, Ohio

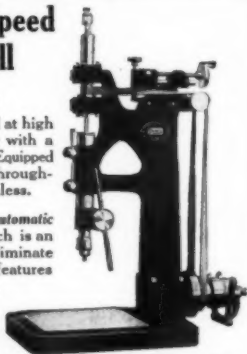
Demco High Speed Sensitive Drill

12,000 R. P. M.

It cuts through the metal at high speed, insuring fast drilling with a minimum of drill breakage. Equipped with Norma ball bearings throughout, making it nearly frictionless.

The belt adjuster and *automatic belt stretch compensator*, which is an exclusive feature, help to eliminate vibration. Other valuable features are described in the circular.

*Also made in floor type,
with one to four spindles*



The Demco Machine Tool Co.

Successors to The DeMooy Machine Co.

706 Frankfort St., N. W.

Cleveland, Ohio



High Grade Ball Bearing Drilling Machines

With 1, 2, 3 and 4 Spindles

Write for descriptive circular

Francis Reed Co.

43 Hammond St.

Worcester, Mass.



IT PAYS TO USE
The Sipp Quick-Change-Speed Drill
because it is substantially free of belt troubles.

Write for Bulletin No. 4

The Sipp Machine Company
Keen Street, PATERSON, N. J.



"Buhr" Drill Heads

Adjustable and Fixed Center

All-Ball-Bearing

Adjustable from 2 to 12
spindles.

Fixed center, any number
of spindles.

We guarantee our Heads
to stand up to capacity.

Nelson-Blanck Mfg. Company
Detroit, Mich.

Three Holes at One Time

Means a Reduction in Drilling Costs



Sellew Adjustable Drill Heads—

will save valuable time
in your shop by drilling
three holes at once.

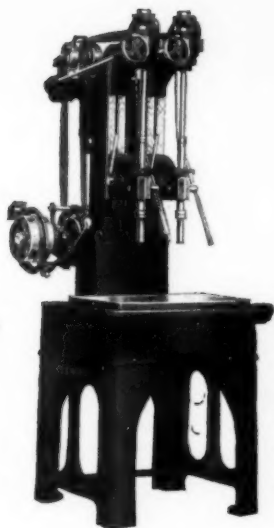
We also make special
heads to order, and
shall be glad to figure on
your requirements. No
obligation on your part.

*Let us help you
save some money*



SELLEW MACHINE TOOL CO.,

**Pawtucket,
Rhode Island**



**With
One
to
Eight
Spindles**

**For
3/4-in.
Drills
and
Smaller**

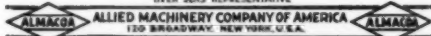
They reduce the costs of sensitive drilling to bed-rock

It is no idle boast to say that Henry & Wright Sensitive Drilling Machines reduce costs to bed-rock. It is because of this very fact that they have been adopted as their standard in so many large shops, one plant alone having between two and three thousand H. & W. drilling spindles in operation. There are reasons, of course, which our Catalog makes clear.

Write for Catalog, with free Speed and Feed Chart

The Henry & Wright Mfg. Co.
760 Windsor St., Hartford, Conn.

OVER-SEAS REPRESENTATIVE



Principal Foreign Offices: Paris, Turin, Zurich, Barcelona



The Friction Drive **FENN Tapping Machine**

Saves Its Cost in Taps

The sensitive, variable speed drive not only gives the proper speed for tapping, ranging from 225 to 600 r. p. m., but eliminates entirely the strain on spindle and taps, avoiding all breakage and the loss in taps and time which this occasions. The result is more work done at less expense.

Capacity up to 3-16-Inch
Also made in bench type

Full details gladly mailed

Fenn Manufacturing Company
Hartford, Conn.

Cable Address "Fenn" Western Union Code
W. L. Fenn W. A. Fenn

Machine Designing

We design machines for special purposes, develop an idea along correct mechanical lines, improve defective designs, often making a success out of a failure. Yankee ingenuity, mechanical expertness and the "knack" which comes from long experience have enabled us successfully to deal with some knotty mechanical problems. If you have one, take it up with us; our engineers will be glad to advise you.

We have a splendidly equipped shop for putting ideas into metal; can make tools and jigs for you if you wish, and guarantee the work.

A letter may start something to your advantage; will you write it?

Southworth Machine Company
Portland, Maine

Model "E-50" Sensitive Bench Drill Press

This 2-speed, direct motor drive, high-speed ball bearing drill is especially designed to care for all work, ranging from the smallest to a $\frac{1}{4}$ " hole.

Can be furnished with special pulleys to drive main spindle any speed up to 10,000 R. P. M.

Main spindle is heat treated and ground to size; it is guided through a quill with support at each end in an annular ball bearing.

End thrust is taken up by an end thrust ball bearing under feed arm.

A quick adjustable table has a working surface $5\frac{1}{2}$ " x 5", and will take work up to $4\frac{3}{8}$ " in height.

Surface of table is ground to insure accuracy.

Table has a self-cleaning taper, which keeps the precisely ground main column free from chips, and serves also as a guard to prevent injury to column.

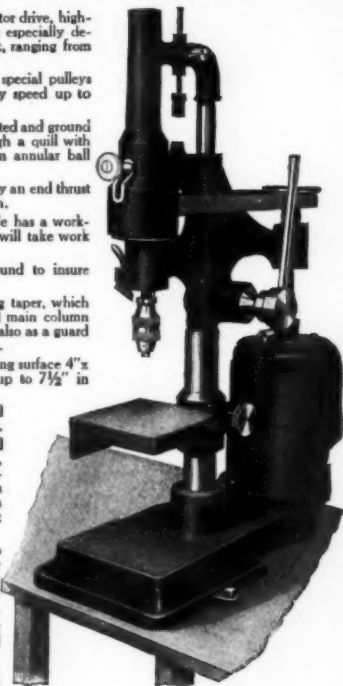
Base has a ground working surface 4" x 6", and will take work up to $7\frac{1}{2}$ " in height.

Base has oil groove and self-cleaning column support.

Your attention is called to another special feature, which is a spindle lock enabling quick changes of drills without the operator's hands coming in contact with belt or pulleys.

An idler pulley takes up any belt stretch which may occur in the endless woven canvas belt, without impairing sensitiveness of machine.

Front pulley and upper part of spindle are guarded by a semi-tubular guard insuring safety. Machine may be operated either by hand or foot control.



Height over all.....24"
Base..... $7\frac{1}{2}$ " x 16"
Diameter of spindle..... $7/16$ "

Spindle feed..... $2\frac{1}{4}$ "
Weight.....62 lbs.
Will drill to center of a 6" circle.

The High Speed Hammer Co., Inc.
Dept. 14
Rochester, N. Y.



Burke Quality

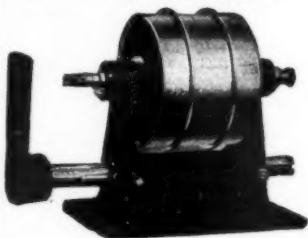
Excels on Fine Points

Machines of Burke Quality are never built with any name cast on the frame but our own—

**BURKE
CONNEAUT
U. S. A.**

For Sale Everywhere

This Tapping Machine Now Has Greater Capacity

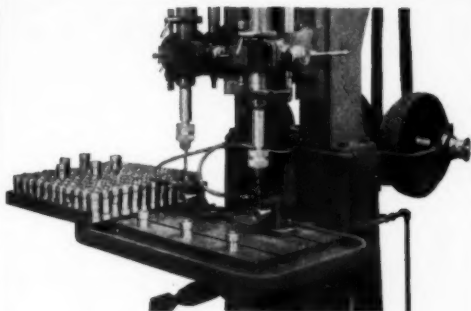


**Burke's
No. "D" Taps
5/8" Holes
in
Horseshoe
Steel**

BUILT throughout with exceptional care, our several sizes give service in proportion. Accurate, rapid and convenient, they give solid satisfaction. No. "D" sells for \$50.

Send for details today

The Burke Machine Tool Co., Conneaut, Ohio



THE *Avey* AUTOMATIC

Operator Does Nothing But Load Jigs

Provides automatic approach and automatic return.

Depth gauge can be set for any desired depth of hole.

The instant the drill withdraws, the operator reloads.

The drill point is allowed to clear the work sufficiently to give operator just enough time to make the change. He operates as many spindles as the nature of work will allow.

THE MACHINE CROWDS THE OPERATOR. You can figure almost exactly what a day's output should be.

The Cincinnati Pulley Machinery Co.
Cincinnati, Ohio



Why Break Taps?

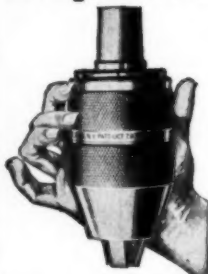
**You are SAFE when using
Woodstock Improved Safety
Tapping Chucks**

The tap is automatically released the moment it binds or touches bottom, hence tap breakage is eliminated.

Automobile and other large manufacturers are enthusiastic about the Woodstock. No work is too hard—it saves time and money in every shop where used. Made in five sizes. Let us send one on trial for that difficult job of yours.

Peter Bros. Mfg. Co.
115 Railroad St., Algonquin, Ill.

Eclipse Self-Tightening Drill Chuck



Roller bearing.

Quickest and easiest grip, and it never slips.

Self-tightening. No keys or wrenches.

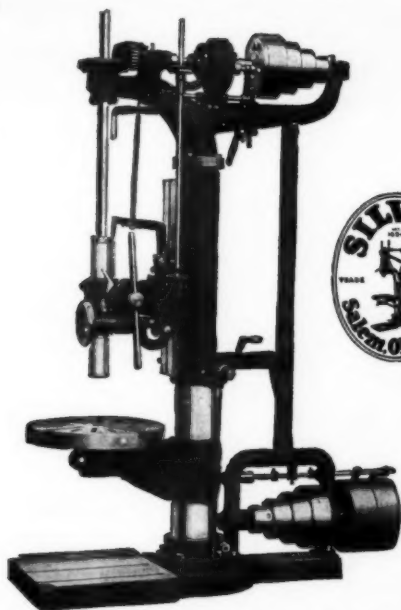
It has no rival in its combination of quick and firm gripping, easy release, simplicity and accuracy.

Saves time and money on high speed drills.

You need it now. Why wait?

Nielsen-Barton Chuck Co., 106 S. Jefferson St.
CHICAGO, ILL.

Also makers of ARBORS for all kinds of Chucks
YOUNG, CORLEY & DOLAN, Inc., 115 Broadway, NEW YORK CITY
New York District Agents



Silver's 25-Inch Drill

SILVER'S DRILLING MACHINES have enjoyed an enviable reputation for 65 years, because of their splendid productive qualities and reliability in long-continued use under all kinds of shop conditions. They give maximum service, maintain their accuracy, and are liked by operators on account of their simplicity and convenience.

The 25" Upright Drilling Machine, shown above, is fully up to the Silver Standard. It is making an excellent record in production, and as an all around drilling tool cannot be excelled.

Complete data upon request—20" or 25" or both

The Silver Mfg. Co. 295 Broadway, Salem, Ohio

Test the Nicholson Mandrel 30 Days in Your Plant

With Nicholson Expanding Mandrels there is no need to hunt through a pile of "solids." Nine "Nicholsons" fit *instantly* any size square or round hole between one and seven inches.

Write us now for trial offer

W. H. NICHOLSON & CO.

117 OREGON ST.,

WILKES-BARRE, PA.

NICHOLSON

Expanding
Mandrels



Fast Threading With Automatic Tools

Threading is an expense. Why not cut that expense in two, and at the same time double the output, with automatic tools?

The Murchey Collapsing Taps and Self-Opening Dies

are guaranteed to produce accurate, uniform threads at the highest possible speeds and for the longest time without repairs. Practically every threading operation can be handled with Murchey Automatic Taps and Dies, and we can furnish special tools on short notice.

Give them a trial; you'll be delighted—and richer

Murchey Machine & Tool Co., 58 Porter Street
Detroit, Mich.

The Drill With The Pull

And a Fool-Proof Table

The Aurora Drilling Machine drills holes in the shortest possible space of time, because of its great pulling power and convenience in operation.

We are not alone in our belief that its large pulley diameters and ratio of gearing deliver more power at the working point than any other drilling machine. Many an expert and "Aurora" users agree that our claims are well founded.

The fool-proof table prevents inaccurate work by a careless operator. The size of the table bearing prevents tilting of the table when the operator forgets to clamp it—an accident that may not often occur, but which generally happens when you are rushing on important work. So why not make it impossible?

Every detail of the "Aurora" has been worked out in the same practical way, and as our overhead is lighter than that of most manufacturers, we believe we can deliver you more *real drill* for the money than you can find anywhere.

Don't be satisfied until you investigate the "Aurora"

The Aurora Tool Works

Aurora, Indiana, U. S. A.



Steel Spacing Washers

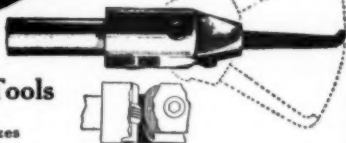
For the Milling Machine



Furnished .003, .004, .005, .006, $\frac{1}{8}$ " and $\frac{1}{4}$ " thick, cheaper than you can make them; also $\frac{1}{2}$ ", 2" and 3" thick or long made of cast iron.

*At principal dealers
or write us*

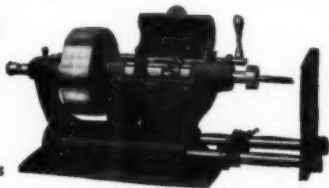
E-Z Set Boring Tools



Made in 3 Sizes

The Unity Manufacturing Co.
4229 Lorain Ave., Cleveland, O.

Workwell Tapping Machine



Built for Service
Has Many Fine Points

2 bar slide to hold work straight with tap.

Steel gears 2" diameter, enclosed and running in oil.

Extra large hardened clutch. One loose pulley with hardened clutch. Non-slip tap holders. Die holder for threading outside threads. Stop adjustment for any depth of thread.

MADE IN TWO SIZES.

Type B 2 for threads to $\frac{1}{4}$ " diameter Type C 2 for threads to $\frac{1}{2}$ " diameter

Give it a trial. Manufactured by

Workwell Engineering & Mfg. Co.

Dept. 2

616-620 W. Monroe St., Chicago, Ill.

New and Improved 20-Inch Canedy-Otto Power Drills

We do not believe their equal can be found in the combination of durability, price and capacity for drilling up to $1\frac{1}{2}$ ".

The bearings are large, with the best of babbitt metal, and with Randall hydraulically pressed sheet graphite cones, *which increases their life 300 to 400 per cent.*

The gears are cut on automatic machines, insuring accuracy and smooth running.



Canedy-Otto Drills are high grade throughout, with all the graduated and automatic features of high-priced machines. Equipped, if desired, with a powerful direct-connected motor, all-spur-gear drive, also a new improved tapping attachment.

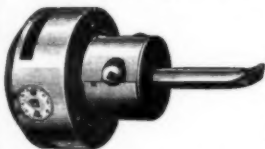
*We are offering big quality for a moderate price
It is no trouble to mail you the full description*

Canedy-Otto Mfg. Company
Chicago Heights, Ill.

Manufacturers of Forges, Blowers, Drills, Lathes and Grinders

Dependable Boring Heads

Save Money on Tools and Fixtures



Holes in jigs, tools and fixtures are now bored accurately to size by clamping the tool or fixture on the milling machine table, and rotating the boring tool in the Casler Offset Boring Head.

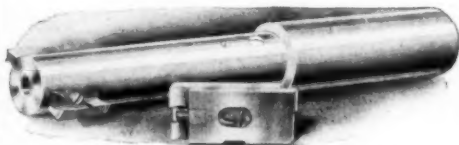
The new way not only saves time, but enables you to use the vertical and horizontal adjustments provided on the machine. Only two tools are needed to bore holes of any diameter from 1" to 4".

Styles and sizes to meet practically every boring requirement are shown in Catalog C

MARVIN & CASLER CO., Canastota, N. Y.

Make Any Odd Size Holes

Adjustable to .00025 Inch



Madison Adjustable Boring Cutters and Bars

With their extremely fine, simple and positive adjustments, they insure straight holes of any size. Rapidly replacing reamers on automatic machines, turret lathes, boring mills, etc., because **they do just the work you want the way you want it**, and reduce high-priced tool-room labor to a minimum. Complete information gladly sent upon request.

MADISON MANUFACTURING CO., - Muskegon, Mich.

Tool Agents Wanted.

The EDLUND Sensitive Drilling Machine

**High Speed--Quick Change
Ball Bearing Throughout
With One to Six Spindles**

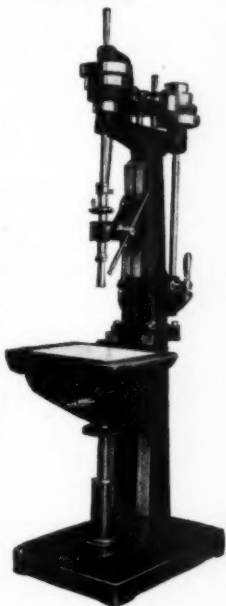
While this high-grade tool conforms in the main to the standard practice, it contains a number of valuable and practical improvements.

The construction and control of the spindle is a fair example of its general excellence of construction.

The spindle is made of high carbon steel, turned and accurately ground to size. Two driving splines fitted into grooves on opposite sides hold it in a central position, reducing friction and wear to a minimum. The careful balance of both spindle and cone pulleys make the machine extremely sensitive and eliminate vibration at high speed.

There are four spindle speeds of 510, 816, 1273 and 2038 r. p. m. with drive pulley running at 500. To change speed the operator shifts handle a quarter turn in a fraction of a second.

Ten ball bearings are used on each spindle, and a small reservoir at the top of spindle sleeve provides perfect lubrication without frequent oiling.



We shall be pleased to mail you the full description

Edlund Machinery Company, Inc.
260-300 Huntington Ave., Cortland, N. Y., U. S. A.

PRODUCTION



FOR PACKARD CAST STEEL AUTO TRUCK WHEELS

WITH
**KELLY
HUB
TOOLS**

Insures Accuracy as well as Speed and Durability

Replaceable and Adjustable High Speed Blades

Send for Catalog J-5

**THE KELLY REAMER COMPANY
CLEVELAND OHIO**

Avoid the Expense

Of Digging Out Broken Taps



The Handy Walton Tap Extractor

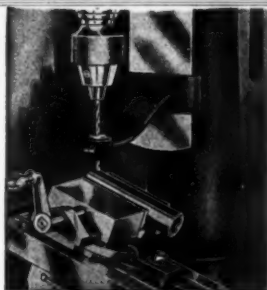
Saves Many Valuable Hours

To have a Walton handy means that when a tap breaks at or below the surface, your high priced mechanic can quickly removed it. Threads are not injured, no time is wasted, and he can go on his way rejoicing. Sizes from No. 8 to 1 1/4".

Descriptive folder or a 60-day free trial, or both, on request

THE WALTON CO., Hartford, Conn.

**Why not augment
your shop and tool
room facilities with
this superior tool?**



Knight Milling and Drilling Machines

reduce time and shop costs on a wide range of hard machining because they are more convenient. You can mill, bore or drill at any angle with only one setting of the job. All adjustments are quickly and easily made.

The three sizes weigh respectively 600, 1,200 and 2,300 lbs. They mill die blocks and beveled ways, make forming tools, mill out metal core boxes, do all sorts of slotting work, and take care of those odd jobs which were nt on the program.

W. B. Knight Machinery Co.

3920 W. Pine St., St. Louis, Mo.

*Send for our
Booklet which
gives many
practical pointers
for tool room
and shop*



Improve Your Production

With the "Apex" Center Drill and Countersink



IT IS MONEY in your pocket to have your lathe operators use this simple, inexpensive device. It not only simplifies their work, but enables them to do a better job in less time.

The added countersink allows of facing work clear to the center without the use of half centers, or the rather delicate operation of partially withdrawing the tail stock spindle.

The "Apex" also enables the operator to face work without reference to other turning operations, as facing does not change the real center. This often saves several handlings of the work and changing of tools and dogs.

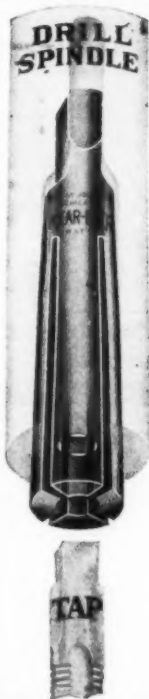
In short, the "Apex" saves time, insures uniform centers, eliminates guesswork, reduces breakage and improves the appearance of the work. Order one now—you'll order more later.

The Apex Drill Company

2455 W. McMicken Ave.,

Cincinnati, Ohio

Put in a Trial Set of "Wear-Ever" Tap Chucks



YOUR OPERATORS, whether men or women, will like them, because they adjust automatically, and are so simple and easy to use. There is no screw to take up variations and true up tap. They are always ready for work, and no time is lost in setting for various size taps.

YOU ALSO will like them, because they are so simple that they are sold at a low price, because one of them will outlast several friction tap chucks, and because they save time and taps.

They eliminate 90 per cent of the usual tap breakage, because they drive taps of all sizes perfectly true, regardless of shank variations.

Thousands of users everywhere attest their high and unvarying quality. So would you.

*May we send a trial set?
We'll both be pleased.*

Scully-Jones & Company

Suite 555 Railway Exchange Bldg.,

Chicago, Ill.

ELECTRIC EUCLID HOISTS

Let OUR Engineers Save YOUR Time

It is possible that you realize the need of modern material handling equipment but cannot spare the time or men to work out the details.

Our engineers are constantly solving these difficulties and helping manufacturers reduce expenses.

Furthermore, this service is absolutely free.

Will you take advantage of it?

The Euclid Crane & Hoist Co.

Dept. C

EUCLID, OHIO, U. S. A.

"The Handiest Tool in the Shop"

Canton Portable Crane and Hoist



Put it beside any other portable crane you can buy, and you'll want it, because it is so much better and stronger.

It enables one man to handle heavy pieces easier than a dozen can by main strength and awkwardness.

Saves waiting when your overhead crane is busy, and carries work to parts of the shop where the overhead system does not reach. And in smaller shops, garages, etc., it is invaluable as a crane, hoist and truck.

*Your choice of several sizes
Booklet E-8 describes them*

CANTON FOUNDRY & MCHE. CO., Canton, O.

McCrosky



McCrosky SUPER Reamers have *proved* their superiority over solid Reamers in many ways.

For example. One set of SUPER blades will outlast a *dozen* solid reamers. When worn out, only the *blades* need be renewed and a set of high-speed SUPER blades costs but a fraction as much as a new high-speed solid reamer.

The unusually large *adjustment* of the SUPER Reamer keeps the blades up to full cutting capacity. Adjustment or replacement is exceedingly simple. A screwdriver is the only tool required and the blades are locked in position almost as rigidly and immovably as those of a solid reamer.

Get the story of McCrosky Cost Cutting Tools in the McCrosky Efficiency Book No. 6—a Text Book on modern machine shop economy and efficiency

McCrosky Tool Corporation
Meadville, Pa.

DETROIT, Kresge Bldg. NEW YORK CITY, 30 Church St.

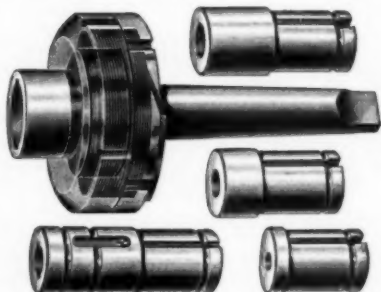
EXPORT MANAGER:

B. Whittaker, 21 State St., New York

COST CUTTING TOOLS

Nothing To Break—

Or get out of order with the
Safety Drill and Tap Holder



Made in Four Sizes, Covering 0 to 2½ in. Diameter

It saves money, time, labor and tools, and is the only device for the purpose which has given universal satisfaction.

You will find it simple, efficient, rapid and accurate. It permits tapping to the bottom. Prevents tap breakage, because it is friction driven, which causes spindle to revolve in case of any undue strain.

The change from drill to tap, and vice versa, is made without stopping the spindle. All "lost motion" is practically eliminated.

*Do not miss this worth-while economy
Glad to send prices and answer questions*

The Beaman & Smith Co.
Providence, Rhode Island



Portable
Electric
Drills

Van Dorn's
ELECTRIC TOOLS

The Van Dorn Electric Tool Co.
Cleveland, Ohio.

Universal Amplifying Gauge

**Does the Work of Many Snap Gauges
Saves Time and is Accurate to .0001"**

For simplifying your gauging system,
increasing accuracy and saving time.

It measures every inaccuracy, either
over or under size, in .0001".

Handles parts of any shape up to 5½"
on the plate and 8" between centers.
And when the gauge is set, the parts
may be gauged as fast as the workman
can handle them.

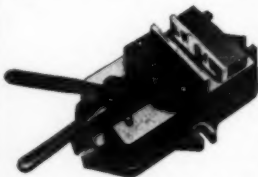
Used by the U. S. Government and
large automobile concerns.

Catalog No. 100 explains fully



THE NORTH SIDE TOOL CO., Dayton, Ohio

5-Inch Colt Armory Model Quick-Acting Milling Vise



This milling vise was developed
and used throughout the war
by one of the largest manufactur-
ers of firearms in New Eng-
land, when both extreme accu-
racy and a big output were a
necessity. It is tried, tested and
proven in the hardest service.

Steel parts are drop forged,
hardened and ground on fitting
surfaces. Base is special iron.
All parts are interchangeable.

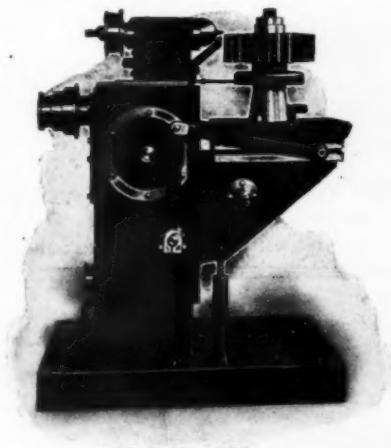
Width of jaw, 5"; depth, 1¼"; maximum opening 2¾"; weight, 40 lbs.
Also a swivel jaw vise, having either a hard jaw with 1 15-16" opening
or a soft jaw with 2 3-16".

For this milling vise of established merit, write to—

The Hartford Special Machinery Co.
285 Homestead St., Hartford, Conn.

It Has Revolutionized Gear Tooth Rounding

Improving Quality—Reducing Cost



The Cross Gear Tooth Rounder

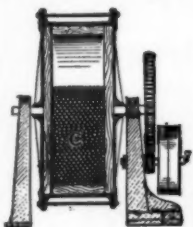
Is *guaranteed* to round 24 teeth per minute, any pitch $\frac{1}{2}$ or finer, and every tooth a perfect half circle from tip to root.

Why get along with imperfect rounding, or with any rounding that is slow and costly, when the Cross Gear Tooth Rounder is guaranteed to put just the right finishing touch on your sliding mesh gears at a much lower cost?

Cross Gear & Engine Company
Detroit, Michigan

Patented here and abroad; sold **ONLY** by us

When hand buffing costs dollars And the Abbott Process costs cents



What's the Answer?

Aren't shop costs high enough at best? And when you are assured by a reputable manufacturer that he can save you 75 to 99 per cent on some part of your work, isn't it worth looking into?

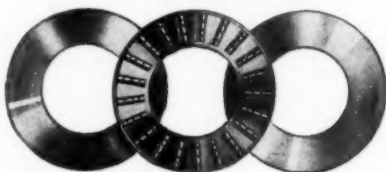
The Abbott Burnishing Barrel

with the Abbott Carbonized Steel Ball Process, will polish your small metal parts at an immense saving, will give a better finish, and will not break, bend or mar anything. Why not put it up to us on *your* work?

The Abbott Ball Company

Elmwood District, Hartford, Conn.

The most extensively used modern method of ball burnishing in the world.



BEARINGS

LIGHT DUTY

HEAVY DUTY

ALL TYPES

MANY SIZES IN STOCK

THE Gwilliam Company

ENGINEERS

253 WEST 58th ST., (at Broadway), NEW YORK

Branch, 1314 Arch St., Philadelphia

Reliable Punches and Dies

For All Makes of Machines

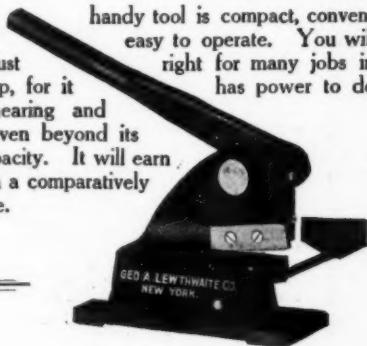


The Lewthwaite kind are made for strenuous service, and guaranteed to make good.

We invite you to send us a trial order, and to use that punch or die on the most difficult job in your shop. We want to add you to our list of thoroughly satisfied customers.

Sheet Iron Shear and Rod Cutter

This handy tool is compact, convenient and easy to operate. You will find it just right for many jobs in your shop, for it has power to do easily shearing and cutting even beyond its rated capacity. It will earn its cost in a comparatively short time.



Our Catalog of Iron-Workers' Tools tells about our Shearing, Cutting and Punching Machines, Power and Foot Presses, Benders, Punches and Dies. Send for your copy today.

George A. Lewthwaite Co.

116 Walker St., - - New York



Starting and finishing this job with one set-up—from machining the casting to grinding the hardened bearing in place—is a good illustration of the **DUMORE** grinder on production. This method positively aligns each bearing with the rest of the machining, at the same time correcting inaccuracies caused by tempering. And the danger of chatter-marks, taper or bell-mouth is eliminated because the **DUMORE** grinder is perfectly balanced throughout and gives correct cutting speeds to even small emery wheels. Limits of .0001" are easily maintained.

There are any number of jobs in your shop for the **DUMORE** grinder which this illustration will suggest. Give your workmen the use of a tool that will speed their work, turn out better tools and improve the quality of your product. The **DUMORE** grinder is light and portable—may be carried anywhere in the shop and is quickly set up.

Ask your dealer for a demonstration. If he is not able to supply your needs, write us for further information and prices.

WISCONSIN ELECTRIC COMPANY

4310 Sixteenth Street

Racine, Wis.

DUMORE

Grinding Hardened Bearings In Place

EQUIPMENT A

For general tool room use. Includes High Speed Internal Spindle A with reach of 3 inches. 30,000 R.P.M. Comes fully equipped. Weighs 17½ pounds.



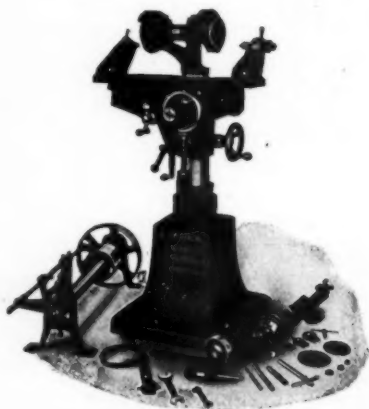
HIGH

SPEED

GRINDERS

Grand Rapids No. 1

Universal Cutter, Reamer
and Tool Grinder



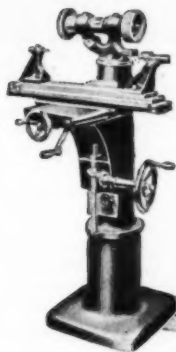
Simple in Design
Efficient in Service
Accurate in Workmanship
Economical in Cost

Ask for bulletin giving full particulars

Grand Rapids Grinding Machine Co.

17 Ottawa Ave., N. W.

Grand Rapids, Michigan, U. S. A.



New

"Wells" Universal Cutter Grinder No. 190

A Quality Tool



In common with the G. T. D. policy of modernity, the "Wells" Universal Tool Grinder has been redesigned and brought strictly up-to-date. Rigid inspections of raw materials and finished product assure the uniformly perfect quality of each & every machine.

Your tool room equipment is not complete without one.

A trial convinces

Machine Tool Division

Greenfield Tap and Die Corporation

**Greenfield,
Massachusetts,
U. S. A.**





Premier Universal Tool and Cutter Grinder

With a swing of 8" and capacity of 15" between centers, together with the regular equipment furnished, it will grind almost any cutter or other tool used in a modern tool room. Workmanship, material and design of the highest quality.

*Write for descriptive
Circular*

Immediate Delivery

Simmons 10" Universal Index Centers



Manufactured with the idea of supplying the market with a device in which accuracy, durability and simplicity are the main issues and in which no one feature is sacrificed for another.

The price is the lowest consistent in keeping with the above standards. Our production is such that immediate delivery can be made.

You need one? Order now!

Simmons Machine Co., Inc., Albany, N. Y.

New York, 1001 Singer Bldg. Detroit, 804 Dime Savings Bank Bldg.
Buffalo, 358 Ellicott Square

The Thompson

A Cutter and Tool Grinder that is equally efficient on cylindrical, surface and internal grinding.

Cutter and Tool

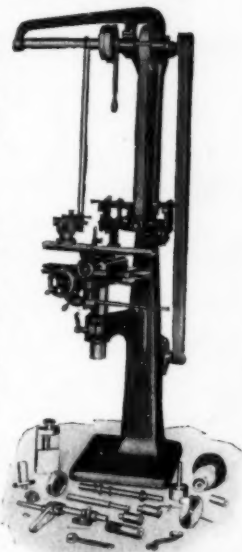
So quick in adjustment and rapid in operation that it makes feasible a more frequent grinding of cutters and tools, insuring their longer wear and faster and better work.

Universal Features

Its simple, practical and efficient cylindrical, surface and internal grinding attachments make it a highly desirable manufacturing machine for small parts which require accurate grinding.

All adjustments are made without moving the grinding wheel head.

Immediate delivery can be made on belt driven machines with separate countershaft, on self-contained and jack shaft driven, and on self-contained and motor driven machines.



Self-contained—For motor drive

Let us send you a copy of our profusely illustrated folder, which makes clear the various uses of this Universal Grinder

The Thompson Grinder Co.
Springfield, Ohio

Range, Accuracy, Output Makes Manhattan Grinder Win



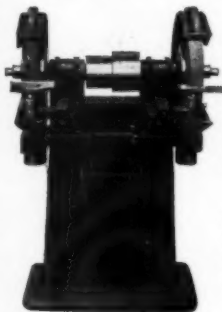
The dials on both feeds are graduated to thousandths, of which fractions may be obtained for extreme exactness. The massiveness and rigidity eliminates vibration and further increases accuracy.

The construction of spindle, with over-size phosphor bronze bearings, give big capacity for heavy cuts. A number of improvements means a more convenient grinder, and hence a larger output is made easy.

A tool that augments economy in any shop. Write for the specifications.

Manhattan Machine & Tool Works
Dept. A., Grand Rapids, Mich.

Imperial Wick Oiling Grinders



The design and construction insure great durability and maximum service. They have large babbitted bearings, lined with sheet graphite, with wick oiling arrangement; heavy spindles; flanges half the diameter of maximum wheel size; easily adjustable tool rests; ring oiling bearings on countershaft, etc., etc.

The box bed column, shown in cut, which eliminates vibration, is regularly furnished with our 16" and 18" machines. Can also be furnished with 6", 7", 8", 10", 12" & 14" Imperials if desired.

Get in touch with us

CLIZBE BROS. MFG. CO., Plymouth, Ind.



No. 7 Polishing Lathe

Improve Your Polishing and Buffing
Department by the Installation of
“W and P”

—Polishing and Buffing Lathes—belted from below through the hollow base, eliminating the carrying of dust and lint by drive belt.

We manufacture more than twenty different sizes and styles of polishing and buffing machinery—suited to every need.

Ask for Bulletins Nos. 19-20-21-22-23-25-26-27 and 28, etc.

Deliveries—Most Sizes and Styles Direct From Stock.

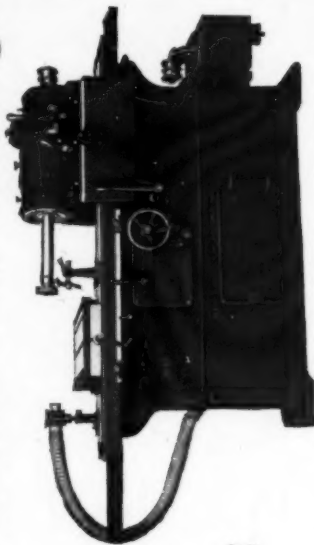
The Webster & Perks Tool Co.
Box 1340 Springfield, Ohio, U. S. A.

Better Compression—Less Leakage

by finishing
Aeroplane and
Automobile
Engine Cylinders
on a

WHITNEY Cylinder Grinding Machine

Write for Catalogue



Grinds holes from 3-in. to 7-in. diameter.
Equipped for wet or dry grinding as desired.

BAXTER D. WHITNEY & SON, Winchendon, Mass., U. S. A.



Magnetic Chucks

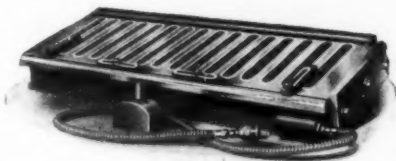
On Milling Machines

Heald magnetic chucks hold securely, demagnetize quickly, exert uniform pull over the entire surface; they are moisture-proof and can be used with or without water; the coils do not over-heat; the top plate is thick, to allow for frequent truing;

Milling with Magnetic Chuck

the unit coil system means an extremely small consumption of current.

Our chucks are in general use in tool rooms and for manufacturing. They help a machine reach its highest efficiency by reducing setting-up time to a minimum. In many cases a change to the Heald method of chucking has doubled and even trebled production.



RECTANGULAR TYPE—Adapted for use in grinding, milling, planing and shaping operations.

The Heald Machine Company

Worcester, Mass., U. S. A.

Your Local Machine Dealer Will Furnish Information and Quotations

New Yankee Drill Grinder Style "WPL"



Capacity, No. 52 to 2¼".

We offer nearly 100 Styles and Sizes of
New Yankees.

A drill can be ground right on a New
Yankee by any boy in your shop.

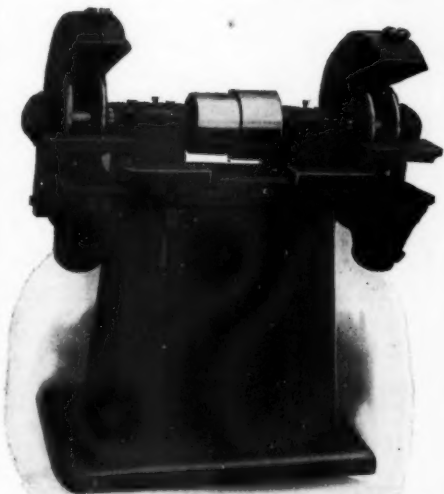
Catalog on request

Wilmarth & Morman Co.

Master Grinder Makers

1185 Monroe Ave., N. W., Grand Rapids, Mich., U. S. A.

Grind it *on a* **"Blount"**



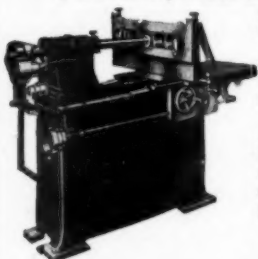
No. 6½

Our eight sizes meet all requirements of general grinding work. The large bearings insure accurate work under continuous heavy load.

J. G. BLOUNT CO., Everett, Mass.

Schmidt's Internal Grinder

For Tractor, Truck and Auto Engines



Simple and Compact

—its speed and accuracy make it a profitable machine to operate.

Automatic reverse feed. Ball-bearing in rear end of emery wheel spindle and rocker arm pulley shaft.

Immediate Delivery

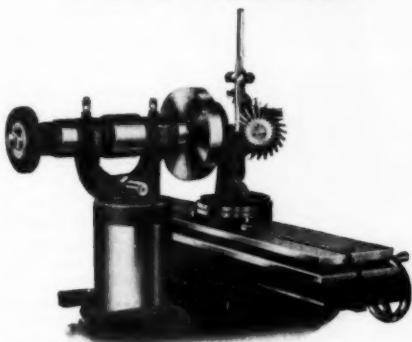
A thoroughly dependable tool—write us

B. L. Schmidt Co., Dept. A 8, Davenport, Ia.



Greenfield Universal

**With Attachments for handling
Every kind of grinding job**



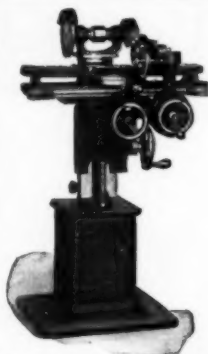
Attachment for grinding cutters of all shapes

This picture shows one of the many complete attachments of the Greenfield Universal Grinder. It is comprised of an angular cutter in place on an attachment particularly suitable for the quick and accurate grinding of all kinds of cutters, including those of odd shapes.

This attachment swivels in both horizontal and vertical planes, both graduated for easy and exact setting. It enables the operator to secure precisely the proper angle on the cutter and the right clearance on the tooth—two very important points.

*Write for the complete description and low price
We also build Plain Grinders for production work*

Greenfield Machine Company
Greenfield, Mass., U. S. A.

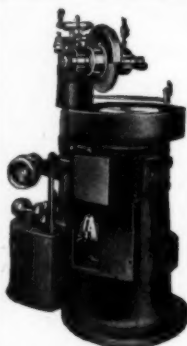


STERLING

**The Ideal
Universal
Tool Grinder
for
Accuracy
Speed
and
Rigidity**

*A post card brings our
new, illustrated catalog*

**McDONOUGH MFG. COMPANY, Machine Tool
Eau Claire, Wisconsin**



No Lost Motion

You secure continuous grinding,
without lost motion, and to within
.0004" of manufacturing accuracy,
when you use the

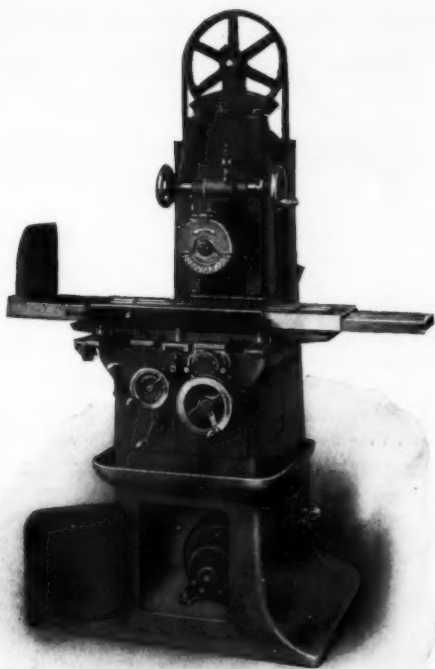
12" Bristol Rotary Precision Grinder

The swivel back type is designed
for flat, convex and concave sur-
faces. The solid back type is for flat
surfaces only.

You cannot secure more accurate
work than they will do, nor better
machines for doing it.

Complete information at your service

Bristol Machine Tool Co., Bristol, Conn.
Successors to The C. G. Garrigus Machine Co.



A Great Machine

The Abrasive Tool Room Surface Grinder

To appreciate the fine points of its design and construction
you want to study a close-up view and specifications.

May we send them?

Abrasive Machine Tool Co.

East Providence, R. I.

"Duplex" Emery Wheel Dresser

Safe—Durable—Economical



Showing the "Duplex" Dresser Disassembled

The "Duplex" Handle is equipped with detachable aluminum hood which *protects the operator* when dressing wheels.

Furnished with either the Brisben "Diamond" Emery Wheel Cutter, for truing large, coarse wheels, or the Brisben "Improved" Cutter for medium and fine wheels and general use.

The "Duplex" Emery Wheel Dresser cannot be excelled for safety, efficiency, durability and economy.

Sent on trial to demonstrate its merits

Cleveland Flue Cleaner Mfg. Co.
321 Frankfort Ave., N. W., Cleveland, Ohio

Steel Handles

Ball Crank, Compound Rest,
Ball Lever Handles, etc.

The *price* is below manufacturing cost of cast or forged handles, and in *quality* there is no comparison, being accurate, highly finished and ready to attach.

Get our catalog of standard handles, with prices and discounts, and note the many advantages.



The Cincinnati Ball Crank Co.
Oakley, Cincinnati, Ohio



“Flint Shotting” Cuts Machining Costs

Flint Shot is a *manufactured* abrasive, produced from St. Peters Rock.

It cuts so much faster and does so much more *uniform* work that its necessarily higher cost compared with natural sands, is saved many times over by the consequent saving in the labor cost of machining and finishing.

Flint Shotting is also worth your study on the score of saving dies and cutting tools on hot rolled or heat treated stock. So much is this true that it may easily pay you to put in a sand-blasting equipment for the express purpose of Flint-Shotting all material that contains mill or furnace scale before it goes to your machine shop.

Our Book “Little Journeys of the Flint Shot Man” gives much valuable data along these lines. Send for it.

United States Silica Company
1941 Peoples Gas Bldg., Chicago, Ill.



Sanitary Steel Lockers

It is just such things as Terrell's Steel Lockers that tend to encourage orderly habits and improve the morale of your employees.

Give your workmen sanitary individual lockers for their belongings, safe from meddlers, thieves and vermin, and you not only increase their self-respect, but show that you regard them as men. It pays.

Terrell's Steel Lockers also make a better investment than wooden fixtures, for they last practically forever without up-keep cost—and then you'll be kind of proud of them yourself, too.

Facts and figures at your service without obligation

Terrell's Equipment Company

Hall & Division Sts., Grand Rapids, Mich.

Also ask about Terrell's Steel Bins and Shelving

Redface Pulleys

Sheaves and Fly Wheels



PERMANENT: They are permanent, as they are not affected by age, heat, cold or moisture.

RELIABLE: They do not loosen up under vibration or intermittent loading.

RUN TRUE: They run true, steady the line shaft, and have a very small load due to windage.

REDFACE PULLEYS are especially adapted to use on motors, fans, pumps and special machinery.

Catalog mailed promptly upon request

Pyott Foundry Co.

Cast Iron Pulleys, Sheaves and Fly Wheels
328 N. Sangamon St., Chicago, Ill.

A Really High Speed Saw

Marvel No. 4

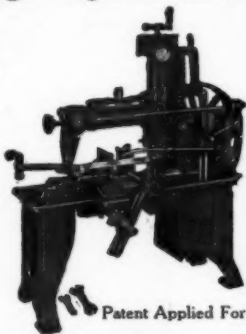
Cuts 6-in. round cold rolled steel in 10 minutes; smaller sizes in proportion.

Cuts on draw stroke only with any desired pressure, and with quick return.

A strictly high-grade tool, improved right up to the minute—the kind that it pays to buy.

Also other Hack Saws, Punches and Shears.

Write for Circulars.



Patent Applied For

Armstrong-Blum Mfg. Co., 341 N. Francisco Ave.
CHICAGO, ILL.

A Smooth, Decisive Cut

No Nicking or Breaking, Saves Material

Think of the high wages you're paying in the tool room. The Peter Bros. Metal Cutter does the work quicker, thereby aiding production and reducing costs. Has no equal for cutting high speed and other hardened steels. Built to last a lifetime. Price is low.

8" Size \$17.50, with C. S.

Splendid for tool room. Cuts high-speed steel up to $\frac{1}{2}$ " square.

12" Size \$50, with C. S.

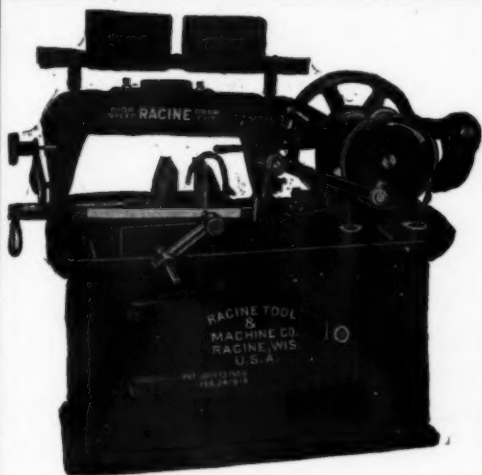
Cuts up to 2 $\frac{1}{2}$ " diameter, round or square, at any angle up to 45 degrees. Ball bearing.

15 Days' Free Trial

Write us or ask your dealer

PETER BROTHERS MFG. CO.
115 Railroad St., Algonquin, Ill.





The "Racine"

The Original, High Speed, Automatic
Positive Lift, Draw Cut
Metal Cutting Machine

Our line is complete—30 different types. Advise us of your requirements and we will quote on a machine suitable for your work.

Catalog "H" gives full particulars.

Racine Tool & Machine Co.

Racine, Wisconsin, U. S. A.

Use "RACINE" H-S Tungsten Power Blades

"QUICKWORK"

REGISTERED U.S. PATENT OFFICE

Rotary Shears

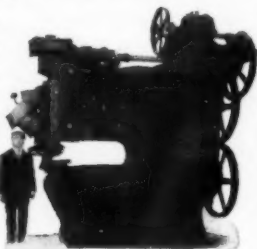
Made in 6 Sizes

Cut all gauges of sheet and plate metal up to 1 inch thick in straight or irregular shapes and openings without cutting in from side of sheet. Leaves square, true edge that requires no finishing. Used in building ships, boilers, tanks, cars & general plate and sheet metal work.

Save 50 to 90%

Eliminates Oxyacetylene cutting and plate planing

Write for catalogue



Patented June 3rd, 1913

THE QUICKWORK COMPANY, St. Marys, Ohio, U. S. A.

The Gray Sheet Metal Cutter

Is NOT a Rotary Shear—It's Better



It's better because it cuts perfectly smooth edges, leaving the metal flat; because it does all that a shearing device will do, and a lot of work that a shear will not do. Feeds like a sewing machine, and easily cuts such intricate patterns as the one in the picture.

Nos. 0, 1, 2 and 3 are built with capacities as follows:

18"	throat,	capacity	1/8"	plate
34"	"	"	3/16"	"
36"	"	"	3/8"	"
36"	"	"	5/8"	"

It may be just what you need. Shall we post you further?

W. J. SAVAGE CO., Knoxville, Tenn.

Peerless **HIGH SPEED**

**The New Standard
Cuts 50 to 100% Faster**



It *increases production* 50 to 100 per cent with the same number of machines, at a greatly reduced cost.

Or it gives *the same production* with two-thirds to one-half as many machines, saving in investment, in attendance and in floor space. And in all cases it saves in expensive material and saw blades.

Proof can be furnished in the record the Peerless High-Speed has made with many large concerns of international reputation. Further proof and the best proof will be to try it in your own shop; and if you think you can afford to do without it after 30 days' use, we will pay freight both ways.

Write for description, names of users and trial plan

Peerless Machine Company
1609 Racine Street, RACINE, WISCONSIN

A Modern Bench

For Tool Makers and Bench Hands

Let us refer you to manufacturers who have installed an equipment of these modern benches. They add materially to the workmen's efficiency, because they have a place for everything, promote order and save time. They are built of select yellow pine with glued-up 1½"



maple top, and have six drawers, a blue print slide, a shelf, three large compartments for stock, and a 5" guard around three sides of top. *Write for more complete description and price.*

THE RITCHIE-WERTZ CO., Dayton, Ohio

More Cuts per Blade

When buying hack saw blades you are interested in the number of cuts you can get from each blade—you are interested in the cost per cut, not the cost per blade.

TUNGSTEN STEEL *Liberty* HACK SAW BLADES

That is why Liberty hack saw blades are preferable—you get more cuts per blade—each cut costs you less.

Whatever your cutting problems are, Liberty hack saw blades are the solution. Made from the finest raw material and carefully constructed, each blade represents the greatest number of cuts obtainable.

Write for catalog and prices

Sterling Products Co., Inc.
549 Washington Blvd., Chicago, Ill.

BECKER



Continuous Millers

If you are interested in reducing your costs by machining your duplicate pieces continuously, thereby increasing your production and effecting big savings, buy a "Becker" Continuous Milling Machine.

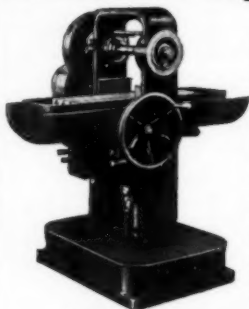
Becker Machines equipped with Becker Hi-Speed Cutters are noted for their production and efficiency.

Write for particulars today

Becker Milling Machine Co.

Hyde Park, Boston, Mass.

A Miller of Superior Design



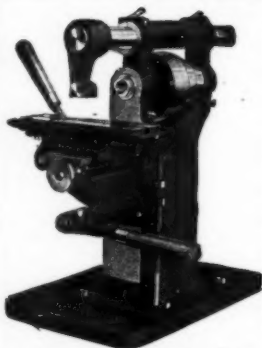
The Briggs High Duty makes increased production easy. It has the necessary rigidity, and a greater driving power than any other tool of its size and weight.

Heavy & Rapid Cuts

—the kind that reduce costs
—are yours for both tool room and shop. Eight changes of feed. Table has screw feed and quick return. Cutters and arbors can be changed quickly.

Great in capacity and economy. Moderate in price.

GOOLEY & EDLUND, Inc., Cortland, N. Y.



Burke's No. 3 Bench Millers

Are Seasoned Tools

Our system of tests insures accuracy, and our methods of construction make it permanent. Frames and parts are carried 6 to 8 months, after work begins on them, before the completed tools receive our final O. K. and all parts are finished and fitted with exceptional care.

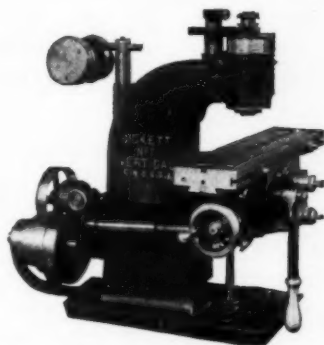
Longitudinal feed, 6 in.;
transverse feed, $3\frac{1}{2}$ in.; vertical
motion of knee, 84 in.; table
surface, $3\frac{1}{2}$ x 12 inch.

Write for Catalog, which also shows larger and smaller sizes.

The Burke Machine Tool Co.
Conneaut, Ohio

**No. 1 Bickett Style C
Vertical Milling Machine**

Back Geared, Power Feed



Longitudinal Feed, 16" – Transverse Feed, 5" – Vertical Feed, 8".

Ball bearing throughout.

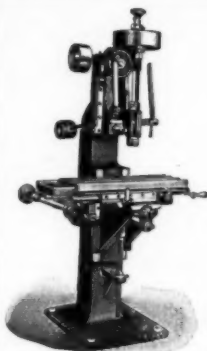
Will make substantial cut with 2" end mill.

Guaranteed to run at as high a speed as
any end mill will stand *on any kind* of material.

A money maker for the die maker.

Write for Circular "V"

Bickett Machine & Mfg. Co.
1110 Richmond St., Cincinnati, O.



The Clough No. 2 Vertical Miller With Slotting Attachment

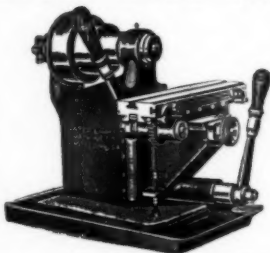
This is an especially practical machine, rapid and accurate, with a wide range of usefulness. It has 28" x 9 $\frac{3}{4}$ " table, 21" lengthwise automatic feed, 9" cross motion and 15" vertical adjustment. It has six spindle speeds.

The Slotting Attachment is strongly bolted to the machine. It has a 12" slide and 4 $\frac{1}{2}$ " stroke. Can be tilted either side up to 5 degrees. The tool block can be swiveled around so as to cut cross or lengthways of the table.

This may just fit your requirements; write for complete data

R. M. CLOUGH, Meriden, Conn.

Just The Machine



for those light cuts on details for Fire-arms, Sewing Machines, Typewriters, Bicycles, Electrical work, and a thousand and one other details used in the manufacture of the various products of the manufacturing world.

Send for descriptive circular

**The Carter & Hakes Machine Co.
West Winsted, Conn., U. S. A.**

AGENTS—for New England and New York, Hill, Clarke & Co.
WESTERN AGENTS—Marshall & Huschart Machinery Co.,
Chicago, St. Louis, Indianapolis.

"Whitney" Hand Miller

THOUSANDS IN USE



Specially handy for the Tool Room. A wide variety of cuts can be quickly set up and completed without any sacrifice of the accuracy so essential in Tool Room work.

Prompt Deliveries

But they are going fast. Don't wait! Send your order in at once.

The Whitney Mfg. Co., - Hartford, Conn.

Chains—Keys—Hand Milling Machines

Dickow's Index Centers Knock Out Worry



Patents Pending



PROMPT DELIVERY

For Accuracy Get Dickow's

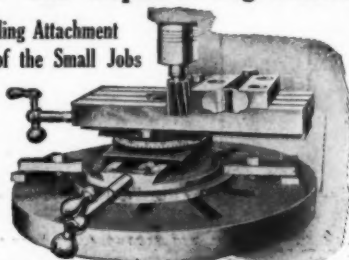
Sold by dealers. Write us today.

Fred. C. Dickow, 35 So. Desplaines St., Chicago, Ill.

Relieves and Replaces Big Millers

Davis Milling Attachment
Does 90% of the Small Jobs

**Converts
any Drill
Press from
14 to 42-in.
swing in
2 Minutes**

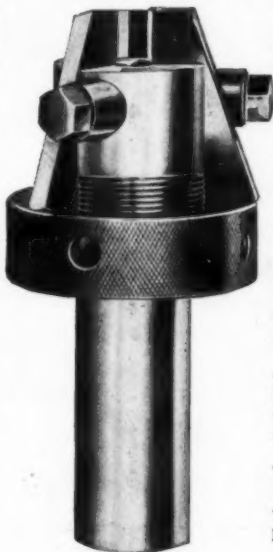


Relieves your large millers, comes in handy spotting castings, milling ends of bosses, etc., and does 90% of the lighter jobs as well as a \$1,000 machine; cuts keyseats perfectly. We also have low factory prices on our cylinder reamer for reboring the Ford car, and on our reliable air compressor. Write for details.

Hinckley Machine Works, HINCKLEY, ILL.

The Genesee Adjustable Hollow Mill

**Replaces Hundreds of Solid Tools
Adjusts to Thousandths of an Inch
Cuts 12" to 15" a Minute in Steel**



It saves tools, saves time, saves money and increases production.

Only seven sizes cover the entire range from $\frac{1}{4}$ " to 2", doing the work of hundreds of solid tools, in less time and with greater accuracy.

It never clogs up with chips and cannot change in size, as solid tools will do after a few grindings.

One set of blades outlasts three to five solid tools, and then may be replaced at small cost.

The "Genesee" is a 100% efficiency device which merits your prompt investigation.

Write for complete facts—you'll be glad you did

Genesee Manufacturing Co.
Rochester, N. Y.

Have You A Hand Miller?

**Make it a Semi-Universal
With our Dividing Head**

It will relieve your expensive Universal Miller of a great variety of small work that can be handled with this head as quickly and as accurately with the hand machine. This is a time saver that you will value highly.



Let us show you what it will do

Whiting & Comstock

32 Union Place,

Hartford, Conn.



Style "C"



The Hinge



Style "Y"



Style "B"



Style "G"



Style "O"



Style "L"



Style "T"

GITS OIL CUPS

Give perfect satisfaction where others fail. State style and size in which you are interested, and we will send free samples and catalog.

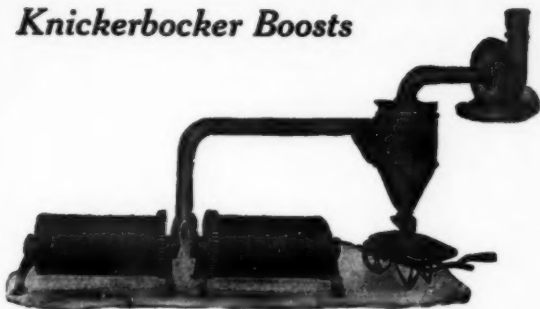
GITS BROS. MFG. CO.

1940 SO. KILBOURN AVE., CHICAGO



Style "H"

Knickerbocker Boosts



"Rarefied" Dust Collectors

Because They Are Better



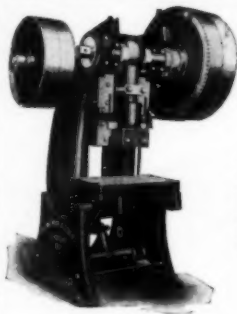
They excel in efficiency, save power and reduce repairs. Being operated on the "rarefied" or partial vacuum principle, the air is drawn thru the Collector, and the dust is removed before the air reaches the fan. This method is thoroly successful with the most difficult dust problems.

The great saving in power also adds to their popularity. Our list of customers includes some of the biggest plants in the country, several using more than twenty "Rarefieds."

Our Booklet tells more about the Collector that makes good—and saves money. Write for a copy.

The Knickerbocker Company
Jackson, Mich.

Loshbough-Jordan Presses



Heavy Duty Inclinable

The No. 5 Combination Geared Press, shown in cut, has capacity for 52 tons pressure. It is also made in the plain flywheel and the geared type.

L-J Power Presses

have massive frames, unusually large shaft bearings, solid web flywheels with removable bushings, wick oiling bearing caps, and every modern improvement for facilitating production.

*Ask us about the
several sizes and styles*

Loshbough-Jordan Tool & Mche. Co.
Elkhart, Indiana

Turn your punch press into an
automatic machine by using the

Acme Roll Feed

and other automatic attachments,
such as our

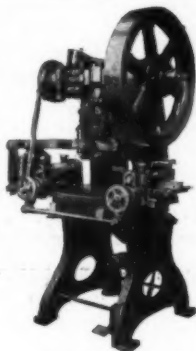
Dial Feeds

Chute Feeds

And Other Feeds

that are specially designed to multiply production, save labor and make your workmen safe.

*Tell us what your punch press
work is, and let us tell you
how to do it automatically*



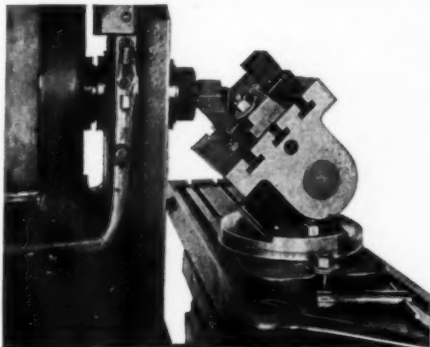
Acme Machine Works

4125 E. Ravenswood Ave.,

Chicago, Ill.

Any Exact Angular Position

Instantly Available for Your Milling, Drilling,
Planing, Shaping and Grinding



The Reid Universal Angle Fixture

makes it easy for even the unskilled operator to do accurate, dependable work in quick time. It does away with waste of time and the unsuccessful results of haphazard set-ups. The design eliminates all overhang, prevents the lodging of chips and dirt, and all other causes of inaccuracy.

The Reid swivels 360 degrees horizontally, and 180 degrees vertically, which facilitates settings of compound angles. The double vernier gives instant readings to 1-12th of a degree—with a sine bar even finer ones. Made in three sizes.

Valuable time-savers in tool room and experimental department. Write for details and prices

Reid Bros. Co., Inc., Beverly, Mass.

Partridge Light Punch Press

For making novelties from sheet metal, including such operations as stamping, blanking, piercing, bending, forming, perforating, embossing, shearing and wire cutting. Has exceptional strength for its size.

Carefully adjusted to secure accurate working of the dies, and to prevent shearing. Pendulum action of lever gives a stroke of maximum power without tiring operator. Workmanship and material the best.

Write me for the interesting price

**E. O. PARTRIDGE, 2041-2049 CHICAGO
W. Lake St.,**

Also Bench, Column & Cabinet Grinders, Polishing Lathes, Light Punch Presses, Hollow Mills, Countershafts, Chuck Arbors and Saw Mandrels



Here Is A Press

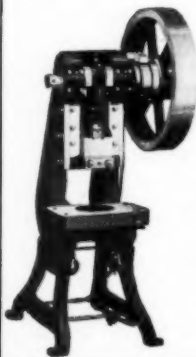
With Plenty of Steam
Back of THE PUNCH

HIGH DUTY
ROCKFORD
PUNCH PRESSES

Made in straight side and inclinable types. Their great power backed by rigid design enable them to do the work you demand and stand up to it.

Write For Catalog

**Rockford Iron Works
Rockford, Ill.**



Universal Angle Plate

For Machining at Any Desired Angle
On Any Type of Machine Tool



8"x10" Worm Adjusting—Made in Four Sizes

Absolute rigidity and non-liability to movement under strain of cut. Work table does not overhang point of attachment to the base; consequently, no support or blocking is required to prevent the movement of table under any stress.

It moves through a complete circle horizontally and 90° vertically, and has a vernier attachment reading to 5' for especially accurate work.

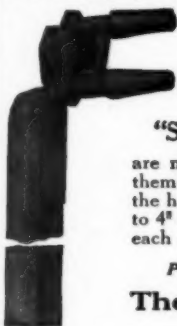
It will convert your plain miller or grinder into a universal machine, and wherever used it saves time and money far beyond its reasonable cost, and insures a high degree of accuracy.

May we send complete data and prices?

Boston Scale & Machine Co.
100 Ruggles Street, Roxbury, Mass.

Why Have Your Men Maimed?

Prevent Injury With "Safety First" Belt Sticks



"Playing safe" always pays good dividends. A smash-up means impaired production, doctor bills and often a damage suit. It doesn't pay.

"Safety First" Belt Sticks

are made with three rollers, two of them tapered, so there is no chance of the hook getting caught. Two sizes, 1 to 4" and 4 to 6", at one price, \$1.25 each or \$12 a dozen.

Play safe by ordering a few now

The Ready Tool Co.
Bridgeport, Conn.

Patented Jan. 30, 1917



Make It Easy To Be Safe

Use and Recommend

The Automatic Extension Reel

For Electric Lamps

Puts safety responsibility squarely on the employee.

Keeps extension cord off nails, floor, machinery and goods.

Holds lamp away from inflammable material.

Protects cord for long service.

No longer any excuse for lamp and extension cord hazards.

Device listed as standard by the Underwriters Laboratories.

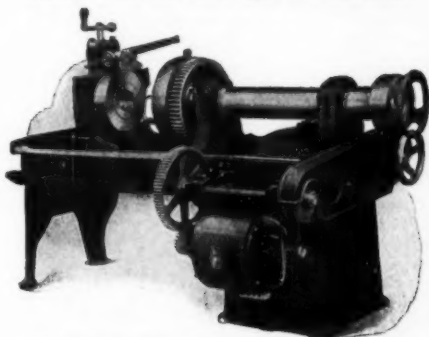
The Cincinnati Specialty Mfg. Co., Inc.
1913-21 Powers St., Cincinnati, Ohio

Branch Offices:

205 Abbott Bldg., Philadelphia, Pa.; 39-41 Cortlandt St., New York City

Points to Remember

About B. & K. Pipe Machines



(No. 3 Peerless. All gears are covered)

- 1 All machines are equipped with a gear box drive for obtaining the proper threading speeds. This eliminates all uncertainty or guess work in selecting the right speed for threading each size of pipe.
- 2 The cutting-off tool is made of beveled high speed steel which requires no reforging.
- 3 Each machine has a reaming attachment for removing the burr.
- 4 A rotary oil pump supplies oil to both the dies and cutting-off tool. The pump is gear driven, not with belt, which soon becomes oil soaked.
- 5 Dies can be changed without removing a screw, and when the die is removed, the die slot can be cleaned without removing the cover.

There are more good points about B. & Ks. which you ought to know. Drop us a line today.

Bignall & Keeler Machine Works
Edwardsville, Illinois

Support Long Stock With



LOWAY

Adjustable Stock Support

You will find it convenient, effective and a real economy. It is adapted to any machine which must be fed with long stock. Easy adjustability in height makes it a simple matter to shift the support from one machine to another, or to support any overhang. A time-saving convenience that will appeal to the man who realizes the value of minutes. We make them in two styles.

It will pay for itself over and over again.

A. F. WAY CO., Inc., - Hartford, Conn.

For the Cheaper, Easier and Safer Handling of Pipe, Shafting and Bar Stock



WHAT'S THE USE of having your bar stock litter up the place, when

"The Handiest Rack"

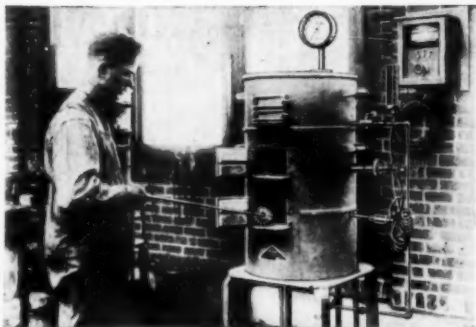
will store it neatly in a fourth the space—where it can be kept assorted and counted—where it can be gotten out without end hauling—where it is out of the way?

Pay its moderate price only once, and it will take care of several tons of your bar stock for another generation without further cost. It pays its way all right, many times over.

*Glad to send on trial
whenever you say*

Wm. S. Yohe Supply Co.
503 Mahoning Road, N. E., Canton, Ohio

Saves $\frac{1}{3}$ in Fuel and More in Tools



The Triad is Safe, Quick, Economical

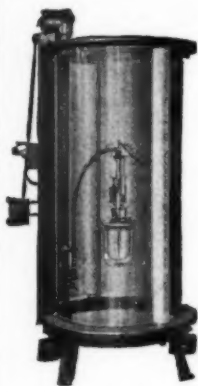
Pre-heating, high heating and tempering in one unit, without exposing the tool to the air between heats, it avoids pitting, scaling and cracking.

Raises carbon steel to hardening temperature in 10 minutes, and high speed steel in 20. Takes but $2\frac{1}{2}$ minutes to heat a $3 \times \frac{3}{4}$ " milling cutter from 1500 degrees to 2250.

Uses but one burner, gas or oil, for the three compartments. The saving in fuel, floor space, tools and time make its economy very much worth while.

*It is the thing for Heat Treating
Let us prove it to you*

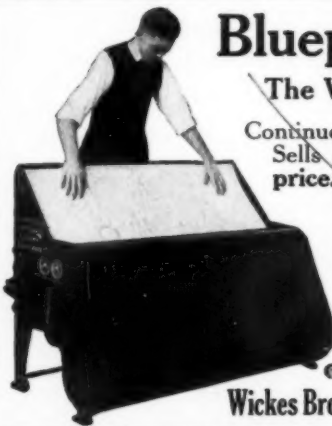
THE W. R. BENNETT CO., Elmwood, Conn.



Electric Blue Printing Machines

Write for Catalogue B-1

Buckeye Engine Co.
Salem, Ohio



Blueprints

The Wickes

Continuous Electric.
Sells at **half the price.** Uses **half the current** of others. Perfect prints up to 48" in width and of unlimited length.

Dept. H
Water Street,
Saginaw, Mich.

Wickes Bros.,

Alert Roller Grip Stub Arbors



Be up to the minute! Get a 25% increased production! Adopt ROLLER GRIP STUB ARBORS for your work. Don't waste your time driving Mandrels in and out of your work, let a ROLLER GRIP do it. Forget your arbor press. Stub Arbors made in all sizes.

Send for circulars (SA).

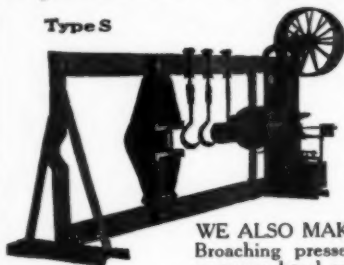
Alert Tool Company

237 North 6th St.,

Philadelphia, Pa.

Hydraulic Wheel Presses

Type S

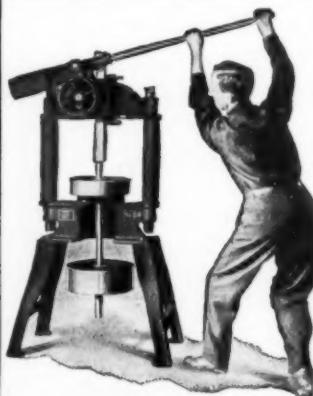


100 Tons
150 Tons
200 Tons
300 Tons
500 Tons

WARRANTED

WE ALSO MAKE Arbor and Broaching presses, for every purpose, hand or power. We are equipped to build any style of press in any size from 10 to 2,000 tons. We solicit your inquiry.

LOURIE MFG. CO. Springfield, Illinois



No. 24 Press

Efficient Equipment Atlas Presses

for building and repairing automobiles and general machine shop operations requiring pressure up to 25 tons and centering capacity up to 38 inches. For driving mandrels; bending and straightening, broaching, embossing with dies, setting bushings and many other every day manufacturing jobs, there is an Atlas Press. All sizes for all purposes. *It will pay you to investigate.*

Atlas Press Co.

317 N. Park Street,
Kalamazoo, Mich., U. S. A.



The Indispensable **GREENERD**

In large and small machine shops, from manufacturing plants where quantity production is the rule, down to the small repair shop, in which each new job is apt to be a fresh problem, the

Greenerd Arbor Press

is of such necessity and importance as to be well described as indispensable.

Twenty-eight years of development and improvement have so multiplied its power, so broadened its functions, so increased its usefulness in every way, that it has become, and rightfully so, one of the essential elements of a modern machine shop equipment.

*If there is anything about Greenerds
you don't know, let me tell you*

EDWIN E. BARTLETT
NASHUA, N. H.



Tucker's Safety First

Oil Hole Covers

Require but one hand to pump in the oil. Adapted to all kinds of mechanism having oil holes leading to a bearing, and locate the parts to be lubricated.

*Send for Catalogue
Oil Hole Covers No. 5*



Style G, Closed



Style G, Open

Style E



Style C



Style F, Drive

Style A



Style B



Rotary Head



Style D, Open



Style D, Closed

W.C. & F.C. TUCKER, Hartford, Conn.

Cap.
20
Tons



List
Price
85⁰⁰

WEAVER Forcing Press

WE ARE SPECIALIZING upon this one size and style of press. It is the ONLY press we make, therefore we are able to produce a better article at less money than were we compelled to carry the overhead necessary to produce a great variety of styles.

5-inch, 9-pound channel steel frame, 32-in. wide, 15-in. hand wheel, carried upon ball bearings. Bronze Thrust Bearings, Screw 2 in. in diameter with 3-pitch Acme thread. Range of movement, 12 in. The screw does not revolve.

List Price (^{32-in.}_{Width}) \$85.00

Weaver Manufacturing Co.

2179 So. 9th Street,

Springfield, Illinois

Saves Time Between Cuts

Insuring Much Faster Chucking

The Barker Wrenchless Chuck

**A
Quick
Action
Chuck
at a
price
you can
afford
to pay**

Is an independent, universal, self-centering device for the faster chucking of any kind of work that is done on turrets, engine lathes or semi-automatics.

The work is centered automatically and chucked instantly with a simple, easy, quick movement of the hand lever.

It also has advantages of its own that are not found in more costly equipment—(1) The lever pressure is regulated at will for either substantial or delicate work; (2) It may also be used with equal satisfaction for bar work.



*Our
illustrated
Booklet
gives
full
details.*

*Write
for
your
copy
today.*

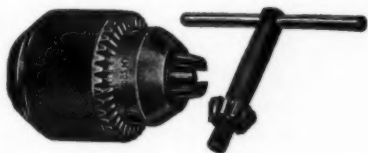
BARKER CHUCK DIVISION

THOMAS ELEVATOR CO., MFRS.

22 S. Hoyne Ave.,

Chicago, U. S. A.

JACOBS IMPROVED DRILL CHUCKS



The fact that they
are the drill chucks
of widest use is mighty
good backing for our
claim that they insure the
maximum output with a
minimum of drill breakage.
What more could you ask?
And why be content with less?

Better have the Catalog

The Jacobs Manufacturing Co.

Hartford, Conn., U. S. A.

Superior Pulling Power

Every National Clutch Pulls More, Size for Size



NOTE
the principle
—friction wedge
plates. No wood,
fiber or other sub-
stance required.

The only Clutch with transversely tapered plates working in opposite directions. This exclusive feature gives the National Clutch its enormous pulling power.

It is successful in every industry and with all kinds of machinery. It adds to the value of any machine tool.

Write us about your requirements and let us quote you.

National Clutch Company
1859 Fulton St., Chicago, Ill.



We manufacture a great variety
Lathe Chucks, Drill Chucks, Centering Chucks
Also
Portable Jaws for Lathe face plates and Machine tables.

Let us send you our Catalog

The Cushman Chuck Co.
Established 1862 Hartford, Conn.

The Reliable Sweetland Chucks Improve Your Lathe Work



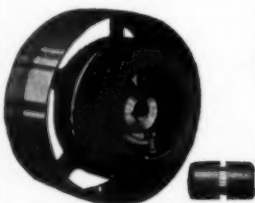
Their greater adaptability is a valuable feature and is bound to save time and money in any shop. They grip quickly and easily, and hold firmly throughout the heaviest operations. Accuracy to 1-1000 of an inch is the Sweetland standard for all moving parts.

Their wearing qualities have become proverbial—20 to 30 years of continuous use is nothing unusual. In fact, there's a stability to Sweetland Chucks which almost defies time.

Order Sweetlands now and dismiss your chucking troubles. Catalog No. 11-C on request. It describes all kinds and sizes.

The Hoggson & Pettis Mfg. Co.
New Haven, Conn., U. S. A.

The clutch that has made good on thousands of machines of all kinds



Enclosed Type, Self-Oiling

Many a mechanical device has disclosed some unexpected weakness when subjected to the strain of rush work, at a time when it is most needed. The safest way is to use what is tried and proven.

EDGEMONT Friction Clutches

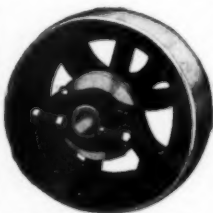
have been used as their standard by leading manufacturers--names on request--because they have always found "Edgemonts" to be handy, simple, and reliable under every conceivable kind of service.

Write for Catalog and names of prominent users

The Edgemont Machine Co.
Dayton, Ohio

Special Clutches and Transmission Machinery for all purposes.

Best in the long run We welcome your test



Double Gripping Power

The Carroll Clutch

Is strictly a high grade countershaft clutch pulley for machine tool drive. Oil them every second month, and forget your clutch troubles.

Write for details of better clutches

L. W. Carroll Manufacturing Co.
Batavia, Ohio



WHY YOST VISES?

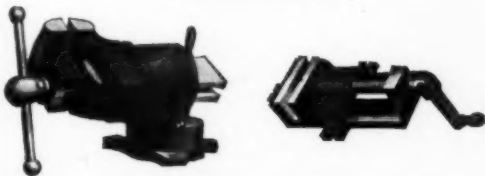
Because the best vise judges, the men who use vises in machine shops all over the world, have given them unqualified approval.

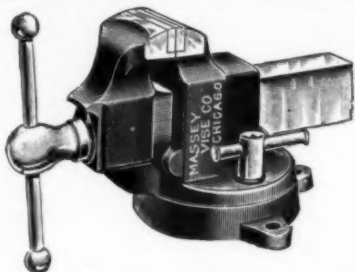
Because they are designed and proportioned to give the user the greatest possible convenience, combined with strength to withstand usual and unusual stresses, and a dependable reliability that is a guaranty of service.

Because they are manufactured in a thoroughly modern plant, with all needed facilities, and by men who are trained for this special work.

*Let us send our catalogue, and suggest
the best vise for your particular work*

Yost Manufacturing Co.
Meadville, Pa.



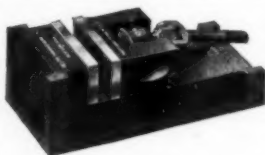


From the standpoint of durability, ease of operation and economy, Massey Vises have no superiors.

Write for Catalog No. 18.

Massey Vise Company

549 Washington Blvd., Chicago, Ill., U. S. A.



Nestor Vise

Here are its Features:

Work is gripped almost instantaneously—moves from maximum to minimum with quick action sliding jaw.

For size and weight an extraordinary gripping range is provided.

Hole can be drilled at right angles without taking work from vise.

Special provision makes it impossible for jaws to cock up. Immediate delivery.

Write for particulars, sizes and prices

Nestor Manufacturing Co., Inc.

40 W. 13th St., New York City

Wedg-lok Swivel Vises



Adjustable to Any Angle

Wedg-lok vises are adjustable instantly to any angle and can be changed to any other angle instantly—no screws, springs, wrenches, cams, or other troublesome parts to cause delay.

Vise automatically locks to any angle with tightening of jaws. One hand does the trick. Can be used in permanent position at any angle by simply tightening thumb screw under locking screw.

Locks Solid—No Vibration

When the Wedg-lok vise is locked ready to use it is perfectly solid and does not vibrate. The vise is locked tightly into the base. This gives all the advantage of the stationary vise with the swivel feature in addition. Write NOW for literature and prices. Sold on Money-Back Guarantee.

The Jahant Foundry & Heating Co.

204 Steiner Ave., Akron, Ohio, U. S. A.

Pattern Shop Machinery

Special Prices if you refer to this ad.



Band Saws

Chicago No. 00 27 in. Wheels
 " No. 0 32 " "
 " No. 1 36 " "



Saw Tables

Chicago No. 5 Stationary Table
 " No. 9 Tiling Table
 " No. 10

Boring attachment if wanted.



Jointers

8 in., 5 and 6 ft. tables and guard.
 12, 16, 20, 24 and 30 in., 7 ft. tables
 and guard.

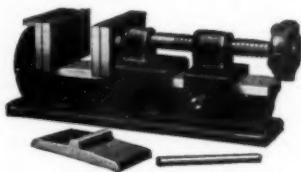
Trimmers, Lathes, Core Box Tools, etc.

Ask for full descriptions

Chicago Machinery Exchange

1211-1227 Washington Boulevard, Chicago

GEM VISE



Drill Vise suitable for the Tool Room and
 Machine Shop. Write for prices and
 further description.

Made by

J. E. Martin Tool & Die Co.

548 West State Street,

Springfield, Ohio

LAST summer, America expected a long war. She prepared for it, and prepared so tremendously that the knowledge of what America was doing broke the spirit of the German resistance.

The war collapsed.

But those preparations must be paid for. Such a sudden victory is expensive in money, *but a slower victory would have cost the lives of thousands more of America's boys*, and even more treasure.

Americans will show their gratitude by helping to pay for those preparations.

The money for the Victory Liberty Loan will pay the bills.

How much will you subscribe?

Subscribe to the Victory Liberty Loan

Space contributed by

A. H. HITCHCOCK, Publisher

Prepared By American Association of Advertising Agencies

A Successful Pipe Bender

The Underwood Bends Any Size Up To 2-in.



FIG. 129

A 2-inch Pipe Bent In 2 Minutes

Railway and general repair shops find this a handy and dependable machine. It bends any size pipe up to 2-in. cold, without flattening or splitting. Dies are easily changed and adjusted.

It works on 80 lbs. steam or air pressure. Puts a right angle bend in a 2-inch pipe in two minutes. The piston is forced back by a spiral spring, so that front head and piston rod require no packing.

Look over this list of high grade, time-saving Portable Tools, and see whether you haven't use for at least one of them. Catalog on request.

Millers; circular planer tools; radius planers; rotary planers; machines for truing eccentrics, facing domes, arms for facing cylinder flanges; rotary flue cleaners; armature and axle bearing borers; pipe benders; locomotive cylinder borers; boring bars for lathe work; crank pin turners; reflex water glass grinders, motors, etc.

H. B. Underwood Corporation

1015-25 Hamilton St., Philadelphia, Pa.

Second-Hand Machinery.

Lists of Second-Hand Machinery, either for sale or wanted, set in uniform style, will be published under this heading at the rate of **50 cents a line**, across the page, each issue. Minimum charge, **\$4 00**. Sub-headings are counted as one line, but the name and address of advertiser are not included in the space charged for. No display in this department.

Write directly to those offering the machines for sale for prices and full descriptions. If what you require is not listed, use the blank enclosed to make known your wants to the publisher

FOR SALE BY

Frank H. Parker Company, First Nat'l Bank Bldg., Chicago, Ill.
Machinery Merchants—Telephones, Randolph 886 & 925

Brake, 8' D. & K., 16 ga., new	110	Millers, U S hand, new	150.
Grinder, Besly No. 8 G 20	250.	Milling mch., slab, 20x72 tabl.	700.
Lathe, 9"x4' Rockford, new	100	Motor, G E 10 h p a c.	200.
Lathe, 12"x4' Hendy, new	700	Screw machine, No 3 Foster	425.
Lathe, 12"x5' Vernon, new	275	Screw machine, No 1 W & S.	300.
Lathe, 14"x5' Hendy, new	800	Shaper, 14" S & M	300.
Lathe, 14"x6' Rockford, new	500.	Shaper, 12" Hendy, geared	150.
Lathe, 18"x8' old type	100	Shaper, 16" G & E., b g	650.
Lathe, 20"x10' L. & S., new	1400	Shaper, 24" G & E., b g	800.
Lathe, 24"x16' old type	250	Shaper, 16" Niles b. g.	400.
Lathe, 28"x12' B. & E., new	2500.	Shaper, 24" geared	250.
Lathe, 32"x24' Pond	2000	Vise, 6" stationary	15.
Lathe, 42"x20' Pond	2500.	Vise, 6" swivel	18.

FOR SALE BY

E. L. Esley Machinery Co., 551 557 Washington Blvd., Chicago, Ill.

DRILL PRESSES

5' Niles full universal radial.	28" Aurora, sliding head.
No. 2 Avey single spindle.	No 11 Natco multiple drills, (2).

GRINDERS

No. 1 Cincinnati, universal.	6"x32" Norton plain.
No. 1 Norton full univ. tool & cutter.	No. 2 Bath universal.
No. 190 Wells cutter and reamer.	10"x48" B. & S. plain.

LATHES

11"x 5' Star.	20"x 8' Hamilton
12"x 5' Witcomb-Blaisdell, taper.	22"x12' Greaves & Klusman.
16"x 8' Von Wyck, taper att.	24"x12' Prentice Bros.
18"x 8' Bradford, q. c. g., taper att.	36"x14' Bradford.

SCREW MACHINES.

No. 00 Brown & Sharpe auto. (2).	8"x4" Acme, plain head.
1" Cleveland automatic.	No. 4 Foster, plain head.
1" Cleveland automatics, (2).	No. 224 Garvin, 17-16" cap., fric. hd.
No. 5 Pearson, hand, fric. head.	1" Smurr & Kamen, plain head.

MISCELLANEOUS.

Bolt cutter, 3-spindle 1" National.	Miller, vert., No. 4 Becker-Brainerd.
Boring mach., 34" Binsse horizontal.	Miller, No. 1-B K. & T. univ.
Boring mill, 36" Bullard.	Planer, 32"x32"x12' Davis & Egan.
Boring mach., No. 0 Fosdick.	Planer, 42"x42"x8' Whitcomb.
Broaching machine, No 3 Lapointe.	Punch, No. 16C New Doty, sgl. end.
Cold saw, No. 114 Higley.	Punch press, No. 76 Toledo, o. b.
Gear cutter, No. 12 B. & S. auto.	Turret lathe, 2"x24" J. & L.

SECOND-HAND MACHINERY

FOR SALE BY

McCoy-Brandt Machinery Company

Office and Warehouse, 210-218 Penn Ave., Pittsburgh, Pa.

NEW EQUIPMENT.

LATHES.

- | | |
|-------------------------------------|--|
| 19"x14" Sidney, q. c., d. b. g. | 16"x 8' South Bend, s. b. g., cone. |
| 19"x12" Sidney, q. c., d. b. g. | 16"x 6' South Bend, s. b. g., cone. |
| 19"x10" Sidney, q. c., d. b. g. | 13"x 6' South Bend, s. b. g., cone. |
| 17"x10" Sidney, q. c., d. b. g. | 13"x 4' South Bend, c. r., h. s. |
| 15"x10" Sidney, q. c., d. b. g. | 14"x 6' Filsmith, semi-q. c., cone. |
| 15"x 6' Sidney, q. c., s. b. g. | 16"x 6' Filsmith, q. c., d. b. g., cone. |
| 18"x10" South Bend, s. b. g., cone. | 10"x 4' Climax, s. b. g., cone. |

MILLING MACHINES.

- | | |
|--|--|
| No. 1 $\frac{1}{2}$ American, geared, plain. | No. 1 Bickett, pl. hand, table 5 $\frac{1}{2}$ "x24" |
| 10"x28" Bristol, vertical, with 13" rotary table. | No. 0 Bickett vertical profiler, table 7"x10" |
| No. 1 U. S. pl., hand, table 6 $\frac{1}{2}$ "x23" | No. 2 Cleveland universal. |

DRILL PRESSES.

- | | |
|--|--|
| 25" Weigel, sliding head. | 14" Excelsior, sens., 2 tables, (4). |
| 25" Silver, sliding head, geared, (3). | 10" Burke sen. bench, cap. 5/16", (5). |
| 20" Silver, plain or geared, (18). | 9" Western Chief, bench, 3", (8). |

POWER METAL SAWS.

- | | |
|---|--------------------------------|
| Peerless, capacity 13"x16" motor bracket, with speed box. | Peerless, cap. 6"x 6" belted. |
| Peerless, capacity 9"x9", belted. | Economy, 6"x 6" belted, No. 2. |
| | Economy, 8"x 8" belted, No. 4. |

ARBOR PRESSES.

- | | |
|---|------------------------------|
| No. 3 Greenerd, (3). | No. 5 Greenerd, with stand. |
| No. 3-A Greenerd, (4). | No. 15 Greenerd, with stand. |
| No. 3 $\frac{1}{2}$ Greenerd, with stands, (2). | |

GRINDERS AND BUFFERS.

- | | |
|---|---|
| No. 2 Woods universal tool & cutter, 18"x2" Webster & Perks wet tool. | 14"x4" W. & P. gr. and pol., No. 1 $\frac{1}{2}$ T. |
| No. 4 W. & P. polish. & buf. lathe. | No. 0 W. & P. pol. & bf'ng la's. (3). |
| 10" Patch, dble. end, with col., (3). | 12" Patch, double end, with col. |
| | 18" Patch, double end, with col. |

MISCELLANEOUS.

- | | |
|---|---|
| Hammers, 50 & 100 lb. Little Giant Press, No. 4 Garrison, o. b. i., 2" str. | Shaper, 28" Queen City, crank, grd. |
| Shaper, 24" Kelly, crank, geared. | Shapers, 18", 21" & 24" Hollingsworth, crank, geared. |

USED EQUIPMENT.

BOLT CUTTERS.

- | | |
|---|--|
| 4" Acme, double-head, with motor. | 1 $\frac{1}{2}$ " Acme, sgl. hd., pump & pan, (2). |
| 1 $\frac{1}{2}$ " Acme, dble.-hd., oil pump, pan. | Nut tapper, 2-spld. Acme, 1 $\frac{1}{2}$ ", pan. |

DRILLING MACHINES.

- | | |
|-------------------------------------|--------------------------------------|
| Radial, 36" Drees & Mueller, pl. | 24" Barnes, plain, sliding head. |
| Radial, 36" Bickford, plain. | 24" Cincinnati, pwr fd., sliding hd. |
| Multiple 8-spindle Foote-Burt. | 28" Back geared, power feed, spld. |
| 20" Baker heavy duty, power feed. | 1-3/16" hole. |
| 24" Colburn hvy. duty, No. 4 Morse. | |

LATHES-TURRET.

- | | |
|---|--|
| 3x36" J. & L., bar and chk'g. equip. | B. & S. 1 $\frac{1}{2}$ " h.s., 7-hole round turret, 9" box chuck. |
| 3x36" J. & L., bar equipment. | 24"x12" Johnson, 6-hole turret. |
| No. 4 W. & S. w. l., 6-hole round turret. | 16" American Fox, 6-h. turret. |
| 2 $\frac{1}{2}$ " Garvin, 6-hole hexagon turret, 12" box chuck. | 16"x6" Reed, tur. on shears. |

GRINDERS.

- | | |
|------------------------------------|---|
| 126" Bridgeport, cupwheel, knife. | No. 13 Brown & Sharpe universal & tool, auto. feed. |
| B. & S. plain, 12x12", auto. feed. | |
| Bath univ. tool & cutter, 14x40" | |

MILLING MACHINES.

- | | |
|---|---|
| No. 4 Garvin plain, table 6x30" | No. 3 Cincinnati plain, q. c. g. |
| No. 1 B. & S. plain, hand feed. | No. 3 B. & S. universal, 12" index head, table 10x50" |
| No. 3 Cincinnati univ., 12" div. hd., driving mechanism for spiral grs. | |

SECOND-HAND MACHINERY

McCoy-Brandt Machinery Company—Continued.

USED EQUIPMENT.

LATHES.

48" Niles car wheel turning, journal attachment, m. d.
 46"x25' (centers) Fifield triple geared.
 42"x24' Fifield triple geared.
 42"x20' Niles boring lathe.
 26" Lodge & Shipley wheel or pulley lathe.
 28"x14' R. M. & C., h. s., c. r., t. a., 24" 4-jaw chuck.
 24"x15' New Haven, h. s., c. r.
 24"x15' Fifield, solid spindle, plain rest.
 24"x12' S. B. & E., 8" raising blocks, h. s., c. r., 18" 4-jaw chuck.
 18"x10' Rockford, q. c. g., h. s., c. r.
 18"x8' Rockford, q. c. g., h. s., c. r., t. a.
 16"x8' Johnson, s. b. g., c. r., solid spindle.
 16"x8' Prentice, c. r., h. s., 12" 4-jaw chuck.
 16"x6' Prentice, h. s., c. r., 12" 4-jaw chuck.
 16"x6' Johnson, s. b. g., c. r., solid spindle.
 16"x6' R. M. & C., h. s., c. r., 12" 4-jaw chuck.
 16"x6' LeBlond, h. s., c. r., 12" 4-jaw chuck.
 Speed lathes, 17", 15", 13"—4' bed.

MOTORS AND GENERATORS.

30 & 20 h. p., 3-60-220 v.
 10 h. p. Fairbanks, 2-60-440 v.
 1 h. p., 2-60—220 v., 1800 rev.
 10 & 4½ h. p., series wd., 220 v., d. c.
 7½ h. p. Triumph, 220 v., d. c., elev. duty
 15 h. p. G. E., 500 v., d. c.
 10 h. p. Westing., 500 v., d. c., 1250 rev.
 90 k. v. A. Lincoln, 3-60-220 v.

PRESSES AND BRAKES.

No. 13 Bliss toggle.
 No. 25 Niagara, arch, 2½" str., 3200 lbs.
 Perkins punch, 2" stroke, 4,500 lbs.
 No. 4 Stiles, 1½" str., 5,000 lbs., pl.
 No. 65 Spe'1 Toledo (cam), 7 & 4" str.
 Punch press, Bliss geared, 8,500 lbs.
 No. 6½-A Perkins sgl. cr., grd., 2" str.
 Consolidated, geared, 4" stroke.
 Waterbury Farrell, geared, str. 8".
 13" 6" Garrison brake or press, cap.
 ½", weight 118,000 lbs.
 8" Robison hand brake, cap. 16 ga.

PUMPS.

3½"x24" Deane deep well, 25 g. p. m.
 for motor drive.
 3½"x10" Deane triplex, belted.
 7x5x10" Hall, duplex, steam.

PUNCHES, SHEARS AND ROLLS.

15" throat, sgl., cap. ¾"x3" arch jaw.
 15" throat, double, capacity 1½"x1",
 Williams-White No. 13.
 14" throat, double, capacity 2½"x1½",
 No. 11 Williams-White.
 24" throats, double, 1½"x1", No. 1
 Long & Allstatter.
 Guillotine shear, capacity 1½" rounds,
 Hiles & Jones.
 Guillotine shear, No. 3 Wilder, cap.
 1, 1½" stroke.
 Guillotine shear, No. 3 Cleveland,
 3½" stroke, capacity 2" sq.
 50" thrt., sgl., cap. 1½"x1" Cincinnati.
 Guillotine shear, No. 5 Cleveland,
 3" stroke, capacity 2½" sq.
 Guillotine shear, Cleveland, 3" stroke,
 capacity, 2" square.
 Slitting shear, rotary, 23" throat,
 capacity ½", Newbold.
 Slitting shear, rotary, 8" throat, cap.
 3/16"; 15" throat, cap. ½".
 Bevel shear, Thompson, rated cap. ½".
 Squaring shear, 106", capacity ½".
 Squaring shear, 26" pwr., cap. 16 ga.
 Rolls, 10" Bertsch, cap. 14" gauge.

SHAPERS AND PLANERS.

24" Cincinnati, crank, b. g., vise.
 21" Queen City, crank, b. g., vise.
 30"x30"x8" Gray, 1 head.

STEAM HAMMERS.

1000 lb. N.-B.-P. dble. frame, (4).
 700 lb. N.-B.-P. dble. frame, (6).

MISCELLANEOUS.

Arbor press, No. 5 Greenerd.
 Boring mill, No. 1 Sellers horizontal,
 2½" bar.
 Bulldozers, Nos. 6 and 7 W.-W.
 Chucks, for lathes and millers, new.
 Compressors, 9x3x10" Westinghouse
 steam, (2).
 Cutting-off mche., 8" Brightman.
 Gear planer, 12" Gleason.
 Pipe mche., 8" E. C. & B., dies, en-
 gine driven.
 Pipe machine., 12" Curtis & Curtis,
 engine driven.
 Riveter, ¾" Shuster.
 Seamer, 30" dbl. P. S. & W., hand.
 Slotter, New York Steam Engine,
 28" rotary table, 12" stroke.
 Tooth rounder, 12" Ingle.

SECOND-HAND MACHINERY

FOR SALE BY

J. J. McCabe Lathe & Mchy. Corporation, 149 Broadway, New York

NEW LATHES ABSOLUTELY IN STOCK.

16"x 6", (5).
16"x 8", (4).
16"x 10", (2).
18"x 10", (10).
18"x 12", (5).
18"x 14", (3).
21"x 10", (3).
21"x 12", (3).

21"x 14", (2).
24"x 12" taper.
26"x 16", (2).
29"x 18", (2).
29"x 20".
29"x 22".

And a few McCabe "2-in 1".

DOUBLE-SPINDLE LATHES.

Covering the capacity of two complete lathes—on the one bed.

48" and 26" swing.

24' bed, 18' between centers.

32' bed, 26' between centers.

NEW PLANER TYPE MILLING MACHINE.

52" in width between housings, 48" in height under crossrail, table 16' in length inside pockets, with four (4) heads—two vert. heads on crossrail and two horizontal heads, one on each housing, complete with countershaft or arranged for motor drive. Equipped with a number of improved features not found on any other planer type milling machine built.

CRANK-MOTION SHAPERS (NEW).

12" stroke, plain, (4).

14" stroke, plain, (6).

20" stroke, back geared, (6).

25" stroke, back geared, (3).

28" speed-box, sgl. pulley drive, (3).

32" speed-box, sgl. pulley drive, (4).

RADIAL DRILLS (NEW).

24' speed-box, tapping att., (6).

24' cone drive, tapping att., (2).

3' speedy sen. type, tapping att., (2).

34' speed-box, tapping att., (3).

4' speed-box, tapping att., (5).

LATHES (USED).

102" swing, 40' bed, Putnam.

60" swing, 26' bed, New Haven.

36" swing, 20' bed, Fitchburg.

36" swing, 16' bed, Putnam.

30" swing, 14' bed, Bement.

26/48" swing, 20' bed, McCabe. dbl. spindle, taper.

24" swing, 15' bed, Bement.

24" swing, 10' bed, New Haven.

18" swing, 10' bed, Porter.

18" swing, 8' bed, New Haven.

17" swing, 8' bed, Bridgeford.

16" swing, 8' bed, Hendey.

14" swing, 7' bed, Star.

TURRET LATHES (USED).

28" rigid type, 4" hole, rapid trav.

21" Gisholt gap style, 1 1/2" hol. spdl.

20" Potter & Johnston, 2" hol. spdl.

3x36" flat turret, Jones & L., grd. hd.

BORING MACHINES (USED).

Horizontal 3" bar Fitchburg.

Upright, 36" Brown & S., tur. hd.

Carwheel borer, 42" Bement Miles.

Carwheel borer, 54" Niles.

OTHER TOOLS (USED).

Shaft straightener, up to 4 1/2" dia., 25' in length, Medart.

Nut tapper, 6-spindle, Acme.

Cutting-off mach., 10' cap., Bement.

Cold saw, 25" blade, Espen-Lucas.

Cold saw, 12" blade, Higley.

Drop hammer, 600 lb. Williams & W.

Hydraulic press, 150 tons cap., for pressing in bushings.

Steam engines (1 horiz., 1 vertical).

Gas engine, 15 h. p., Fairbanks-M.

Boring bar, 4 1/2" diam., 8' 6" long, with sliding head and inserted screw.

PLANERS (USED).

54"x 12" Pond, 4 heads.

42"x 9" New Haven, 1 head.

32"x 10" New Haven, 1 head.

30"x 6" Pond, 1 head.

24"x 6" Gray, 1 head.

GRINDERS (USED).

Universal, 12"x 66" Landis.

Universal, 12"x 36" Iroquois.

Planer type surface, 26" between housings, 8' table, Springfield.

Heavy roll grinder.

Plain grinder, 10"x 30", Bridgeport.

Small grinders, varied assortment.

MILLING MACHINES (USED).

Cincinnati No. 3, pln., tables 52"x 12", longitudinal feed 34", (7).

Brainerd, pl., tbl. 48" long, 14" w., (2).

Newton horiz. & vert. hd., tbl. 60"x 12".

Lincoln type, tables 28"x 7", (10).

New planer type milling machine.

DRILLS (USED).

Upright, 36" swing, Snyder.

Radial, 2 1/2" arm, Fosdick.

Radial, 6' arm, Niles.

Four spindle Niles, table 8' long.

SECOND-HAND MACHINERY

J. J. McCabe Lathe & Mchy. Corporation—Continued.

GEAR CUTTERS (USED).

Gear shaper, 36" Fellow, cutters. | Gear planer, 24" Gleason, complete.

SHAPERS (USED).

12-14-16 and 20" stroke, various makes.

HYDRAULIC RIVETER (USED).

Chambersburg Bull 8" gap with overhead crane, hoist, accumulator, pump and complete outfit—still set up as used.

AIR RIVETER (USED).

"Albree type" portable style, 19" gap cylinder, 12"x12", cap. 14" rivets.

PUNCHES AND SHEARS (USED).

Shear, 36" tht., cap. about 4" plate. | Punch, 14" throat, 4" capacity.

Bevel shears, Lennox rotary, 4".

Punch, portable, Fels.

Small splitting shears.

BENDING ROLLS (USED).

Wickes Bros., 14' 2" between housings, top roll 14" diameter counterbalanced, raised and lowered by power. Lower rolls 10" diameter. Drop-end housing. Motor drive, with motor and controller complete.

Standard pattern, 8'9" between housings. Top roll 11" diameter. Lower rolls 9". Belt drive.

HORIZONTAL PUNCH (USED).

Hilles & Jones, 60" gap. Capacity 34" hole thru 1" plate. Weight 68,000 lbs. Arranged for motor—no motor.

BOILER-PLATE DRILL (USED).

Prentice Bros. heavy boiler plate drilling machine, having 4 radial arms. Distance between housings 10'. Table 3' wide, 11'6" long.

FOR SALE BY

A. D. White Machinery Co., - 108-114 N. Jefferson St., Chicago.

PUNCH PRESSES AND PUNCHES AND SHEARS.

No. 3 American Can, o. b. i.

No. 3A Willard.

No. 3-P Ferracute, solid back.

Waterbury reducing press, 8" str.

No. 29 Bliss, gang, dbl. action.

No. 6 L. & A. 4" thr., cap. 4" s. e.

DRILL PRESSES.

23" Rockford, stationary head.

30" Buckford, sliding head.

42" Barnes, sliding head.

1-spd. Henry & Wright, h. s.

42" Miles plain radial.

New upright drills, 24".

ENGINE LATHES.

10"x54" Davis.

16"x12" Beaman & Smith.

20"x 8" Boye Emmes, quick change, double back gear.

24"x10' Putnam.

26"x25" Blaisdell.

28"x10' Fifeild.

Niles double axle lathe.

GRINDING MACHINES.

14" Norton, floor, (2).

14" Safety Emery Wheel, floor.

2" Springfield, double wheel, floor.

Springfield, dbl. wheel, water.

No. 2 Leland & F., water.

No. 38 Safety Emery Wheel Co. plow grinder.

MILLING MACHINES AND PLANERS.

No. 3 Cincinnati plain.

22"x22"x5' Ingersoll slab.

No. 6 Becker Brainard, Lincoln.

16"x16"x36" Draper planer.

30"x27"x 6' Putnam planer.

SCREW MACHINES.

7-16" Cleveland, friction feed.

4" Cleveland, friction feed.

4" Cleveland, friction feed.

4" Cleveland, jigger feed.

4" Hartford, (3).

1" Cleveland.

14" LaVigne.

4" Cleveland, semi-automatic.

MISCELLANEOUS.

Die filing machine, Simplex.

Gas engine, 35 h. p. Columbus.

Gas engine, 55 h. p. Bruce McBeth.

Hammer, 500-lb. Sandage.

Hobber, No. 1 Farwell.

Oil gas generator, No. 3 American.

Saw, No. 54 Nutter-Barnes.

Turret lathe, 24"x26" Greenlee.

Turret lathe, 20" Fay & Scott.

SECOND-HAND MACHINERY

FOR SALE BY

Cyril J. Bath & Co.,

721 St. Clair Ave., N. E., Cleveland, O.

Bought with care, we offer this stock at prices such as our friends can afford in the competition of peace-time manufacture.

AUTOMATICS.

Cleveland automatics from 6" to 24", full equipment; fine shape.
No. 6 Potter & Johnston chucking lathe, late model, good condition.
7" x 14" Potter & J. large arm auto. chucking; very fine shape, low priced.
No. 33 New Britain auto. chucking machines, five stations and tapping spindle, handle work up to 2 1/2" diameter in chuck jaws and 5 1/2" swing outside chucks, very good, (3).

BAR STOCK MACHINES.

No. 4 Warner & Swasey screw machine, wire feed, friction back grd., power feed to turret, large equipment, collets and round turret; good.
3" x 36" J. & L. flat turret lathes, dbl. sp. chuck, toolholders, A-1 cond., (2).
1 1/2" Universal 5-spdl. automatics with large equipment; good condition, (2).
4 1/2" x 30" Bardons & Oliver, with all geared head, motor driven, with motor, capacity up to 4 13-16" stock, large equipment; excellent condition.

BORING MILLS.

No. 5-D 6-spindle Moline Hole Hog table type cylinder boring machine, 48" between uprights; good as new.
30" Bullard vertical boring mill, belt feed; excellent condition.
36" Niles boring mill, friction feed.
4-spdl. Foote-Burt vert. cylinder boring mch. with sp. adj. in pairs, 4" fixed centers, 5" min. adj. bet. inside spdls., cone dr., table fd.; excellent shape.

BULLDOZERS.

No. 6 Williams & White.
No. 7 Ajax hi-speed, steel bed, 16" stroke, late model, ram face 6' 4" x 12", gearing ratio 16:1, 30 strokes per min., dbl. geared; fine cond., with motor.

DRILLING MACHINES.

2-spindle 14" Henry & Wright sens. ball bearing drill, table 17" x 12".
24" Weigel sliding head, with tapping head, good as new, (2).
Carlton sensitive ball bearing radial, new.
No. 11 Natco 8-spindle multiple drill, can be used with 10 spindles; max. drilling area 12" x 12"; min. 4" x 4", belt feed; fine shape.
20" Barnes drills, back geared, power feed, (4).
5' Baush radial drill, good condition.

GEAR CUTTERS.

26" No. 3 Brown & Sharpe plain, with all parts, very good condition.
36" No. 3 Brown & Sharpe gear cutter as above.

GRINDERS.

No. 1 Cincinnati tool and cutter, with all parts, very good.
12" Bristol vertical round surface grinder.
16" x 42" No. 23 Landis plain, with heads if desired for crankshaft grinding, good condition.
No. 60 Heald cylinder grinder, very good condition.
Landis No. 3 universal, takes 12" x 12".
12" and 18" Bryant internal, late model; excellent condition.
Wilmarth & Morman surface grinder, magnetic chuck, good.

LATHES.

Lo-swing lathes, 2-20 tool carriages, fully equipped, good as new, (8).
24" x 11' Johnson, gear fd., comp. r., hollow spindle, complete; good condition.
18" x 10' Schumacher & Boye, compound rest, change gears, fine condition.
24" x 16' Bradford, belt feed, hollow spindle, compound rest, good condition.
28" x 11' New Haven, compound rest, screw cutting, double friction counter-shaft, 4-jaw independent chuck, old but good.
32" x 14' Fay & Scott compound rest, screw cutting, solid spindle, power feed, 28" 4-jaw independent chuck, old but good.
16" x 8' Monarch, compound rest, belt feed, hollow spindle.
24" Gisholt turret, late model, motor dr., t. a., large equip., very fine cond.
24" Steintle turret lathes, latest model, fine shape, (2).
Porter-Cable lathes, 3 months old, (10).
17" x 8' Sidney lathes, nearly new, comp. rest, quick change gears, (8).
21" Gisholt turret lathe, taper att., bar holder and drill support, very good.

SECOND-HAND MACHINERY

Cyril J. Bath & Co.—Continued.

MILLERS.

Taft-Pierce thread miller.

No. 6 Whitney hand miller.

12" Pratt & Whitney semi-automatics, almost new, (7).

No. 00 Brown & Sharpe plain, hand.

No. 25 Becker pln. hor. almost new.

No. 3 Becker vertical, good as new.

No. 2 Cincinnati vertical, cone type, good as new, (2).

No. 3-B B. & S. hi-power, fine shape.

No. 4 B. & S., cone type, chucking hds., vert. attach., etc., very good.

No. 2-B Milwaukee, all gr.sgl.pulley, div.hd., vise & pump, used 1 month.

PLANERS.

24"x24"x6' Putnam, single head, good shape.

36"x36"x14' Pond, single hd., in good condition, with table 6" thick, no broken

T-slots or pegged gears, a good rugged tool, fine condition.

MISCELLANEOUS.

Bolt cutters, 14" Acme, like new, (3).

Gear testing machine, Brown & Sharpe, practically new.

Nut tapper, 5-spindle National.

Running balance machines, Norton, for balancing crankshafts, armatures, and similar running parts, almost new and motor driven, (2).

Thread miller, Lees-Bradner, spindle to 6" diameter.

FOR SALE BY

Girard Machine & Tool Co., 491-493 N. Third St., Philadelphia, Pa.

Boring and chucking machine, vertical, 36" Brown & Sharpe.

Engine lathe, 24"x12' Pratt & Whitney.

Engine lathe, 25"x16' Blaisdell.

Engine lathe, 28"x12' New Haven.

Lot of 12, 14, 16 and 18" lathes, with various size heads.

Planer, 36"x36"x12' Wilson, two heads on cross rail.

Planer, 30"x30"x 8' Woodward & Powell, one head on cross rail.

Planer, 24"x24"x 6' Woodward & Powell, one head on cross rail.

Turret lathes, 2"x24" Jones & Lamson, geared set-over head, single pulley drive, bar equipment, (2).

Turret lathes, No. 3 Foster, 14" automatic chuck capacity, oil pan, pl. hd., (4).

Lot of other size lathes and screw machines, drill presses, etc.

FOR SALE BY

B. C. Allen Machinery Co.,

104 S. Clinton St., Chicago

Blowers, Nos. 4 and 6 Buffalo	
Bolt cutter, 14"	\$ 100.
Drill press, 14" sensitive	30.
Drill press, 16" high speed	140.
Drill press, 24" sliding head	110.
Drill press, 2 spindle, 14"	65.
Drill press, 4 spindle, 16"	175.
Exhaust fan, 24"	35.
Gear cutter, 50" G. & E.	1,000.
Grinders, emery, Nos. 2, 3 and 4	
Grinder, die	65.
Hack saw, 4"x4"	15.
Hack saw, 8"x8"	25.
Lathe chucks, 3, 7, 10, 14 and 16"	
Lathe, 13"x6" bed	135.
Lathe, 15"x6" Sebastian	265.
Lathe, 16"x6" Lodge & Davis	350.
Lathe, 20"x10" taper att.	500.
Lathe, 25"x16", 3" blocks	450.
Lathe, speed, 9"x4"	15.

Lathe, speed, 11"x4"	\$ 35.
Lathe, tur., 18"x6" B. & O. f. h.	450.
Miller, P. & W. hand No. 0	100.
Miller, Burke hand, No. 3	140.
Miller, No. 9 Kempsmith	800.
Press, foot	15.
Press, foot, large	35.
Polishing lathe	15.
Pipe machine, Jarecki 2"	125.
Pipe machine, 6" Oster	300.
Planer, 17"x17"x3'	325.
Planer, 32"x32"x8'	450.
Punch press, No. 1 solid back	65.
Punch press, No. 2 solid back	125.
Punch press, No. 53 solid back	400.
Punch press, heavy str. sided	125.
Shaper, 6" crank	125.
Shaper, 15" crank	350.
Square shear, 22"	25.
Square shear, 36", gap 18"	144.

SECOND-HAND MACHINERY

FOR SALE BY

The Strong, Carlisle & Hammond Co., Cleveland, O., Detroit, Mich.

ENGINE LATHES.

- | | |
|--|--|
| 14"x 6' Blaisdell, r. & f. rest. | 14"x 6' LeBlond, c. r., 4-step cone. |
| 14"x 6' LeBlond, c. r., 4-step cone. | 15"x 8' Rockford, c. r. |
| 18"x 10' LeBlond, c. r. & t. a., 5-step cone, (2). | 17"x 8' W. F. & John Barnes, c. r. |
| 18"x 10' Springfield, c. r., 5-step cone. | 17"x 7' Fulton, c. r., g. f. h. plain turning lathe. |
| 17"x 8' Sidney, c. r. & t. a., 3-step cone, (5). | 14"x 6' Monarch, c. r. |
| 13"x 8' South Bend, c. r. (5). | 11"x 3' Blount speed lathes, (4). |
| 13"x 8' South Bend, c. r. (2). | Old style stud lathes, (3). |

TURRET LATHES.

- | | |
|--|---|
| 14" Lodge & Davis, plain head. | 1" Wood tilted turret, plain head. |
| 14" Lodge & Davis, b. g. | 1" Millholland plain head turret screw machines, (2). |
| 24" Davis turret boring and chucking lathe, with forming rest. | No. 4 Warner & Swasey g. f. h. turret screw machines, (18). |
| 14" Warner & Swasey, plain head. | |

SCREW MACHINES.

- | | |
|----------------------------------|--|
| 14" B Cleveland automatic. | 2" Cleveland full automatic. |
| 14" A Cleveland automatic. | No. 00 Brown & Sharpe automatic. |
| 14" A Cleveland automatic. | 1" Hartford full automatic. |
| 14" A Cleveland automatics, (2). | 2" Hartford full automatic. |
| 2" A Cleveland automatics, (3). | No. 33 New Britain multiple spindle automatic. |
| 24" A Cleveland automatics, (2). | |

DRILLING MACHINES.

- | | |
|---------------------------------------|-----------------------------------|
| 5-spindle Detroit, semi-automatic. | 20" Barnes, stationary head. |
| 25" Hoefler, stationary head. | No. 4 Barr sensitive. |
| 20" Barnes, all geared stationary hd. | 12" U. S. sensitive (7). |
| 25" Superior, s. hd., tapping attach. | 20" Canedy-Otto, stationary head. |

MILLING MACHINES.

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|---|--|
| Special horizontal slab. | Taylor & Fenn, vert. spindle, h. f. |
| No. 3 Garvin, plain, b. g. | No. 2 Bristol, hand, with p. f. to table, (5). |
| No. 1 Plain milling machine. | No. 3 Burke, bench. |
| Pratt & Whitney, hand and weight feed, (2). | No. 3 Becker, vertical spindle. |

GRINDERS.

- | | |
|---|----------------------------------|
| No. 10 Cochrane-Bly auto. bench saw filing machine. | Type "DE" Hisey-Wolf internal. |
| Whitney wet tool. | Wells universal tool and cutter. |
| Greenfield univ. cutter and reamer. | Wilmarth & Morman plain surface. |
| B Standard Diamond grinders, (2). | Capitol internal, (3). |
| No. 1 Warner & Swasey cock. | 8" Blount emery stand. |

HAMMERS.

- Coffman, post, power dr., 35 lbs., c. s. | 100 lb. Cady, belt drop, c. s.

GEAR CUTTERS.

- No. 2 Whiton automatic. | 26" No. 3 Brown & Sharpe auto.

KEYSEATERS.

- Mitts & Merrill, square frame. | No. 2 Mitts & Merrill.

RIVETERS.

- | | |
|-------------------------------------|---------------------------------------|
| 11 1/2" throat Giant rivet spinner. | No. 80 Giant riveting machines, (2). |
| No. 203 Giant rivet spinner. | Giant bench type riveting mchs., (2). |
| Prouty rotary blow, bench type. | |

PUNCH PRESSES.

- | | |
|------------------------------------|--|
| No. 11 Badger, hand. | Toledo double acting toggle drawing press. |
| Willard, plain inclinable. | No. 3 R. R. Ames & Co., plain. |
| No. 4 Cleveland, plain inclinable. | |

SHAPERS.

- | | |
|-------------------------------------|--|
| 16" Steptoe, b. g. crank. | 16" Smith & Mills, h. s., b. g. crank. |
| 16" Gould & Eberhardt, b. g. crank. | |

SECOND-HAND MACHINERY

The Strong, Carlisle & Hammond Co.—Continued.

MISCELLANEOUS.

Blower and tank, Roots.	Polishing lathes, City Machine Co.
Cold saws, 12" Burke, (2).	double end, (8).
Cold saw, Higley.	Polishing stands, heavy, (2).
Filing machine, Simplex.	Polishing head.
Furnaces, S. C. & H., gas, (2).	Shear, 30" Niagara foot pwr. squaring.
Furnace, No. 3 Frankfort, double.	Shear, No. 10 rapid rotary.
Hack saw, Excelsior, power.	Surfacing mch., Peerless, belt, 20x41".
Hack saws, Victor, power, (3).	Surfacing mch., Wall, duplex No. 6.
Milling fixtures, thrd., No. 2 Hall, (2).	Tapper, 1/2" Burke, bench.
Polishing lathes, Hammond, (3).	Tapper, 1/2" friction vertical bench.

FOR SALE BY

Brownell Machinery Co.,

11-13 Eddy St., Providence, R. I.

Cutting-off machines, H. & B. 6"	Planer, 24"x24"x8' Whitcomb.
accelerated speed type.	Planer, 30"x30"x10' Powell, 2 heads.
Drills, 23" Reed-Prentice, new.	Planer, 36"x36"x12' Powell, 2 heads.
Drop hammer, 200 lbs. plain.	Planer, 60"x60"x24' Woodward & Powell, 4 heads.
Drop hammer, 400 lbs. automatic.	Press, No. 5 Perkins, single action.
Gear cutters, No. 3-A Cin'ti., new.	Screw mchs., auto., No. 0 B. & S., (3).
Lathe, 18"x8' Perkins, new.	Screw mchs., auto., No. 2 B. & S., (3).
Lathe, 21" Gisholt turret.	Screw mchs., National Acme No. 52.
Lathe, 24" Gisholt turret.	Screw mchs., National Acme No. 53.
Planer, 24"x24"x6' Putnam, new.	

FOR SALE BY

The E. A. Kinsey Co.,

Cincinnati, Ohio,

Indianapolis, Indiana

DRILLING MACHINES.

20" Hoefler, b. g., p. f., sta. hd.	1/2" type T., U. S. Elect. 220 v., 60 cy.
1/2" type BA-1 U. S. Electric, 220 volts,	National 16-spindle multiple.
60 cycle, 3 phase.	Bausch 4-spindle multiple.

GRINDERS.

Water tool, 26 in. wheel.	Wesche electric buffing, a. c. motor.
---------------------------	---------------------------------------

LATHES.

16"x6' Lodge & S. q. c., d. b. g., t. a., b. s.	30"x20' Harrington, s. b. g.
19"x10' Greaves-K., c. r., s. & f. r.	30"x12' Bradford, s. b. g.
14"x6' Lutz, t. a., c. r.	15" Frybail spinning, (2).

PLANERS.

24"x24"x6' Am., heavy pat., rebuilt.	32"x32"x8' New Haven.
26"x36"x12' Am., 2 hds. on cross rail.	72"x72"x31' Pond, 2 hds. on c. r.
48"x48"x16' Am. hvy., 2 hds. c. r., 1 head each housing.	18' Niles-B.-P. plate, 1/2" steel plate.

TURRET AND SCREW MACHINES.

No. 1 Am. Tool & M. Co., sq. ar., s. b. g., 4 s. c.	No. 4 Brown & Sharpe, w. fd., (8).
20" No. 7 Bardons & O., g. fr. hd.	3x36 Jones & Lamson flat turret.
	No. 2 Warner & Swasey, (2).

MILLING MACHINES.

No. 14 LeBlond plain.	Newton 21"x8' slab miller.
48" Newton plain.	No. 13 Brown & Sharpe plain.
No. 3 Cincinnati plain.	

MISCELLANEOUS.

Abrasive metal cutter, 12" Peters.	Riveter, 3-16" Schuster, on ped.
Band saw, 36" Towsley, with motor.	Tapping machine, Garvin No. 1.
Centering att., Carroll No. 2, cap. to 2".	Tapping mches., spec. hor. friction, double end (2).
Chain machine, Cross & Spiers.	Saw bench, Beach, table 36x54".
Chuck, 12" universal.	Special internal grinding fixture
Gear hobber, 18" Gould Eberhardt.	Brown & S., for No. 1 universal.
Oil pump, Trahern No. 1 F. rotary.	Vise, flanged, Brown & Sh. No. 4.
Profiler, Pratt & W. No. 12, belt.	

SECOND-HAND MACHINERY

FOR SALE BY

Vonnegut Machinery Co., 43 S. Meridian St., Indianapolis, Ind.

MILLING MACHINES.

24x24 Franklin, slab.
No. 2 Fox hand miller.

No. 2-A Becker vertical.
No. 1-B Fox.

GRINDERS.

9" Heald ring grinder.
8" Heald ring grinder.
No. 20 Landis plain.
10-12-L Besly, with ring wheels, (5).
10-G Besly, disc.
15" Besly, ring wheel chucks, (4).
Walls duplex emery band & disc, (4).
18" No. 6 Besly dbl. sp. ring wheel.

No. 12 Gardner double disc, with foot treadle, (2).
No. 120 Gardner double disc, with foot treadle, (2).
12x42" No. 2 Cincinnati universal.
Ott plain grinders, (25).
6x32 Norton grinders, (3).

DRILL PRESSES.

26" Barnes, sliding head.
23" Rockford, sliding head.
21" Rockford, sliding head.
20" Barnes, round base.
20" Superior, (2).
No. 1 Avey, agle. spdle., bench, (87).
No. 2 Avey, single spindle, (8).

No. 4 Avey, (3).
No. 1-B Avey, (5).
2-spindle No. 1 Sellow heads, (6).
20" four-spindle Barnes, (3).
20" 3-spdl. Foote-Burt, ind. feed.
No. 0 Garvin duplex horizontal, (2).

TURRET LATHES AND SCREW MACHINES.

12" Gisholt, gap.
21" Gisholt, gap.
24" Gisholt, gap, (2).
23" Gisholt, gap.
23" Lodge & Davis.

No. 2 Warner & Swasey, (2).
2x24 Jones & Lamson, (3).
1 1/2" Hardons & Oliver, (3).
1/2" Garvin hand screw machine.

ENGINE LATHES.

Cataract precision, (2).
14"x 6" Monarchs, (3).
16"x 6" Monarchs, (8).
15"x 6" Seneca Falls.
16"x 6" Lodge & Davis, (2).
15"x 6" Lodge & Davis, (4).
18"x 8" Whitcomb-Blaisdell.

30"x17" Sellers, old style.
25"x18" Sellers, old style.
36"x20" New Haven, old style, not screw cutting.
38"x20" New Haven, old style not screw cutting.
26"x7" 6" spec. pat. on raising block.

AUTOMATICS AND SEMI-AUTOMATICS.

19" Potter & Johnston, (4).
Potter & Johnston, piston ring, (2).
4-spindle, No. 55 Acme, (2).
2" Cleveland, 5 hole, (3).

1-1/16" Cleveland, 5 hole, (2).
1/2" Cleveland, 5 hole.
1/2" Cleveland, 5 hole, (3).

MOTORS.

3 h. p. G. E., 220 volt, (2).
15 h. p. Fairbanks & Morse, 220 volts.
20 h. p. Robbins & Myers, 220 volts.
25 h. p. Robbins & Myers, 220 volts.

25 h. p. General Electric, 220 volts.
30 h. p. Robbins & Myers, 220 volts.
40 h. p. General Electric, 220 volts.
30 h. p. Western Elect. compensator.

MISCELLANEOUS.

Arbor presses, No. 1 Greenerd, (15).
Arbor presses, No. 2 Greenerd, (66).
Arbor presses, No. 0 Atlas, (16).
Arbor presses, No. 1 Atlas, (6).
Balancing machine, 24" Defiance.
Centering machine, 20x10 Whiton.
Chuck, grd. scr., 10 1/2" No. 154 Union.
Chucks, comb., 8" No. 21 Union, (5).
Compressor, 7x9 Ingersoll, steam dr.
Crane and hoist, No. 3 Canton port.
Drilling and tap. mche., Beaumont.
Emery grinder, steel discs, 18", (26).
Hydraulic press, 10-ton Watson-S.
Keyseater, No. 2 Davis.
Nut tapper, 4-spindle Acme.
Oil extractors, No. 400 Curtis (3), and 6 extra pans.

Oil filter, No. 5 style "A" Cross.
Profiler, 1-spindle Garvin.
Pulley lathe, 20".
Pulley lathe, 30".
Punch, No. 4 Whitcomb, power.
Punch presses, No. 1 Toledo incl., (5).
Punch presses, No. 2 Toledo incl., (4).
Punch presses, No. 3 Toledo incl., (4).
Punch press, No. 23 Toledo incl.
Radial, 4' Hammond sensitive.
Riveting hammers, No. 3-A high speed, (3).
Riveting hammers, No. 2-A high speed (2).
Tapper, No. 2 Garvin automatic.
Tap. mchs., 1/2" Rickert-Shafer, (12).

SECOND-HAND MACHINERY

FOR SALE BY

Niles-Bement-Pond Company, • **111 Broadway, New York**
Located at our various factories and stores.

LATHES.

- | | |
|----------------------------------|--|
| 12"x 5' Robbins, draw-in attach. | 18"x 8' Davis, q. c., raising blocks to swing 24". |
| 14"x 6' Bradford, c. r. | 18"x10' Schumacher, B. & E., quick change, taper. |
| 14"x 6' Whitcomb, taper, pan. | 21"x 8' LeBlond, grd. hd., hvy. duty. |
| 14"x 6' LeBlond, geared head. | 21"x 8' Bradford, c. r. |
| 15"x 7' P. & W. speed lathe. | 21"x10' Bradford, c. r. |
| 16"x 6' Reed, r. & f. rest. | 22"x 8' Niles, c. r. |
| 16"x 8' Bradford, c. r. | 30"x14' Niles, c. r. |
| 16"x 8' Von Wyck, quick change. | 30"x16' Pond, quick change. |
| 18"x 6' Prentice. | |
| 18"x 8' LeBlond, quick change. | |

TURRET LATHES.

- | | |
|-------------------------------------|--|
| 2"x24" I. & L. cone head. | 34" size I Gisholt, 220 volt, motor drive, d. c. |
| 2"x24" Warner & Swasey, hol. hex. | 28" Milwaukee rigid, 4 1/2" spindles. |
| 2"x28" P. & W. turret lathe. | 34" size K Gisholt, 4 1/2" spindle. |
| 28" size J Gisholt, 3 1/2" spindle. | |

SHAPERS AND PLANERS.

- | | |
|---------------------------------------|---|
| 16" Stockbridge shaper, p. d. f. | 48"x48"x16" Pond, 3 heads. |
| 14"x 6' Niles agl. trav. head shaper. | 72"x60"x10" Pond, 2 heads. |
| 26"x28"x 6' Pond, 2 heads. | 72"x72"x18" Pond, 2 heads. |
| 30"x30"x 6' Pond, 2 heads. | 72"x72"x24" Pond, heavy forge, 3 heads. |
| 30"x30"x 8' Pond, 2 heads. | 10"x10"x25" Pond, 220 v., d. c. motors. |
| 30"x30"x10" Pond, 2 heads. | |
| 32"x32"x 6' Gray, 2 heads. | |

MILLERS AND GEAR CUTTERS.

- | | |
|---|------------------------------------|
| No. 1 1/2 Brown & S. univ., late type. | No. 4 36"x9" B. & S. gear cutter. |
| No. 3 Brown & S. univ., old style. | No. 6 60"x12" B. & S. gear cutter. |
| No. 3 LeBlond, universal, heavy, late type. | 15" Gleason bevel gear generator. |
| No. 5 Brown & S. vert., old style. | 24" Gleason bevel gear planer. |
| No. 3 36"x8" B. & S. gear cutter. | 48" Gleason bevel gear planer. |

DRILLING MACHINES.

- | | |
|---|--|
| 28" B. F. Barnes, sliding head. | 4' Prentice speed box radial. |
| 32" Aurora, sliding head. | 4' Niles semi-universal, old style. |
| 32" Aurora, sliding head, tapping attachment. | 5' Niles semi-universal, old style. |
| 60" Niles, heavy vertical. | 6' Niles semi-universal, old style. |
| 3' Grant radial drill and boring mch. | 6' Pond heavy plain radial, 220 v., motor drive, d. c. |

GRINDERS.

- | | |
|-------------------------------------|----------------------------------|
| No 2 Brown & Sharpe surface. | No. 1 Tindell wet saw blade. |
| No. 3 Rivett internal. | 4"x30" No. 11 Brown & Sharpe pl. |
| No. 1 Cincinnati cutter and reamer. | 12"x36" No. 4 Landis universal. |
| No. 3 B. & S. cutter and reamer. | 18"x36" Norton plain. |

BORING MACHINES.

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|--|
| No. 1 Bement horizontal, 3 1/2" spindle, 5' table. |
| No. 2 Bement horizontal, 3 1/2" spindle, 6' table. |
| No. 2 Niles horizontal, 4 1/2" spindle, 6' table. |
| No. 3 Bement horizontal, 4 1/2" spindle, 9' table. |
| 72" Niles b. & t. mill, 220 v., motor drive, d. c. |
| 10' Niles b. & t. mill, 220 v., motor drive, d. c. |

MISCELLANEOUS.

- Air compressor, type 10 Ingersoll-Rand, steam driven, capacity 535'.
 Air compressor, Ingersoll-Rand duplex, motor driven, with 35 h. p., d. c. motor, capacity 215'.
 Boilers, 100 h. p. Biglow, (B).
 Boilers, 150 h. p. Babcock & Wilcox.
 Engine, 166 h. p. McEwen, direct connected to 100 k. w. generator, d. c.
 Engine, 200 h. p. Brown, belted to 200 k. w. Westinghouse generator, d. c.
 Engine, 500 h. p. Allis-Chalmers, direct connected to 400 k. w. generator, 220 volt, d. c.

SECOND-HAND MACHINERY

FOR SALE BY

Russell Machine Company, 28th St. & A. V. R. R., Pittsburgh, Pa.

LATHES.

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| 48" Niles car wheel, m. d. | 20"x8'6" Walcott, q. c. g., (3). |
| 48"x16" turning lathe, c. r., sgl. gd. | 18"x 8' Lodge & Shipley, q. c. g. |
| 46"x33" Fifield, triple geared. | 16"x 8' Porter, h. s., c. r. |
| 46"x21'6" Fifield, triple geared. | 16"x 6' Blaisdell, h. s. |
| 35"x25" New Haven, raised to 56". | 14"x 8' American speed lathe. |
| 28"x 8' New Haven, h. s. | 16"x 5' Jones-Lamson turret lathe. |
| 26"x10'6" Walcott, q. c. g. | 24"x11' American semi-auto. turret. |
| 24"x16' 6" Johnson lathe. | 14"x 5' Fox brass lathe. |
| 20"x12' Prentice, h. s., c. r. | Speed lathes, various sizes, (10). |

PLANERS.

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|-----------------------------------|-------------------------------------|
| 24"x24"x8' Lodge & Davis, 1 head. | 48"x48"x20' Gray, 4 heads. |
| 24"x24"x8' Chandler, one head. | 72"x48"x16' Pond, 2 heads. |
| 36"x36"x12' Pond, three heads. | 80"x72"x20' Thurston-Gardner, 1 hd. |

DRILLS AND BORING MILLS.

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|---|--|
| Burke sensitive bench Nos. 0 & 1. | 24" New Haven plain drill. |
| 10" Sensitive, slide table 11"x8". | 30" Hamilton, b. g., sliding head. |
| 14" Woodward-R. sensitive bench. | 36" Gould & Eberhardt, tap. attach. |
| No. 3 Prentice port. rope drive drills. | 4' Fosdick plain radial, tap. attach. |
| No. 22 Silver, new, h. p. post. | 4' Bickford plain radial, tap. attach. |
| 20" Silver, new, plain and bk. gd. | Garvin 4 spindle drill press. |
| 20" Foote-Burt mfrs. vertical. | 48" Niles car wheel boring mill. |

HAMMERS, BULLDOZERS AND MILLERS.

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|--------------------------------------|---|
| 800 lb. Bement-Miles sgl. leg steam. | Bradley cushion helves, 40 lb. & 80 lb. |
| 1500 lb. Bement sgl. leg steam forg. | Little Giant 50 lb. power hammer. |
| 800 lb. double leg steam drop. | No. 2 Brown & Sharpe plain miller. |
| 1500 lb. double leg steam drop. | Williams-White bulldozers, No. 6. |

ENGINES, BOILERS AND PUMPS.

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|-------------------------------------|---|
| 5"x8" Erie vertical steam engine. | 50 h. p. White-Middleton gas engine. |
| 8"x8" Lane horizontal steam engine. | 50 h. p. vert. submerged tub. boiler. |
| 4 h. p. Fowler vertical gas engine. | 6 h. p. vertical single flue boiler, (4). |
| 40 h. p. Backus horiz. gas engine. | Pumps, various sizes and makes. |

PUNCHES, SHEARS AND PRESSES.

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|--|--|
| 50" throat Reade sgl. end punch and shear; massive construction. | Peck, Stow & Wilcox squaring shear, foot pwr., cap. 16 gauge, 32" knife. |
| No. 8 L. & A. geared s. e. punch, | Bliss geared slitting shear, 18" thr. |
| 34" throat, punching cap. 3" x1". | Perkins No. 2 rotary shear, 12" thr. |
| Industrial d. e. punch and shear, 12" throat, cap. about 1" x1". | No. 86 dbl. housing knuckle press. |
| Ohl hd. power punch and shear, cap. to punch about 1" x1", shear 6" x3". | No. DG-76 Ferracite single acting. |
| Niagara No. 24 hand punch, 15" thr. | No. 24 Greenard arbor press. |
| | No. 4 Stevenson foot pwr., 6" thr. |
| | No. 59 1/2 Toledo drawing presses, (2). |

MISCELLANEOUS.

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|---|---|
| Air compressor, s. cyl. 3x5", belted. | Grinder, Landis, 25"x96". |
| Air compressor, double cyl. 2 1/2"x4". | Grinders, Western Nos. 1, 2 and 3. |
| Air compressor, 6x6 Laidlaw hor. | Grinder, 10" dbl. e. emery, on column. |
| Air compressor, 81' Blaisdell hor. | Grinder, Diamond 12" d. end bench. |
| Belting, various widths and lengths, leather. | Grinder, Russell 12" dbl. end bench. |
| Blower, Root No. 3 Acme, hand. | Grinder, Lancaster 16" d. e. emery. |
| Blower, pressure, No. 0 Sturtevant. | Grinder, Barnes 20" wet tool. |
| Blower, pressure, No. 3 Sturtevant. | Grinder, 20" Ransom wet tool, 250 volt, d. c. |
| Blower, Sturtevant No. 3 Monogram. | Keyseater, 18"x2", No. 2 Baker. |
| Blower, Champion No. 4, fan or vol. | Lathe, wood, 18"x8" Chapman. |
| Blower, Buffalo No. 8, pressure. | Mortiser, Williamsport sash. |
| Bolt cutter, 14" Kenyon. | Pipe mch., 6" Curtis, engine driven. |
| Brazing table, all iron, 17"x29 1/2"x31". | Polishing stand, Diamond No. 2. |
| Cold saw, Gliem, 22" dia., cap. 6" rd. | Polishing stand, d. end, 42" x3" arbor. |
| Cold saw, Newton, 20" dia., cap. 5 1/2" rd. | Polishing stand, Cuyahoga dbl. end. |
| Crane, 10" I-beam, 12'3" span, with Harrington 6,000 lb. chain hoist. | Rip and cut-off saw, 30"x38" Badger. |
| Crane, traveling, 10 ton Pawling & H., 3 motor, 60' span, 220 v., d. c. | Shaper, 24" Cincinnati, b. g. crank. |
| | Silent chain belt, 16"x8"x1 1/2" p. |
| | Tapping machine, No. 2 Garvin. |
| | Vises, Forges, Tanks, Lockers. |

SECOND-HAND MACHINERY

FOR SALE BY

Brown-McDonald Machinery Co., 2323 N. 9th St., St. Louis, Mo.

BORING MILL.

48" Bullard, vert., 1 plain & 1 swivel hd. on cross rail, face plate jaws, used.

LATHES.

13"x 6' South Bend, c. r., h. s., new.

13"x 6' Champion, c. r., h. s., new.

15"x 8' South Bend, c. r., h. s., new.

16"x 8' South Bend, c. r., h. s., new.

16"x 8' Walcott, q. c. g., d. b. g., c. r.,

h. s., new.

20"x 10' Walcott, q. c. g., d. b. g., c. r.,

h. s., new.

16"x 8' American, q. c. g., used.

20"x 10' Walcott & Wood, h. s., cpd. r., used.

20"x 8' Oakley, d. b. g., not screw cutting, used.

14"x 6' Fitchburg, s. s., p. r., used.

14" Pierce, plain head, turret, new.

22" Davis, b. g. turret, used.

DRILLING MACHINES.

No. 1 Burke, bench, with chucks, new.

14" Excelsior, 2 tables, new.

4" Leland Gifford, high speed, with pump.

31" No. 101 C-O. radial new.

20" Silver, s. b., w. & l., new.

3' Drees simplex radial, with tapping attachment.

20" Silver, s. b., b. g., p. f., new.

20" Champion, s. b., w. & l., new.

20" Champion, s. b., b. g. & p. f., new.

25" Aurora, b. g., p. f., new.

30" Prentice, s. b., s. h., p. f., used.

SHAPERS.

16", 20" & 24" Milwaukee, b. g., latest improved, new.

SCREW MACHINES.

No. 4 Smurr & Kamen, geared friction head, p. f. to turret, new.
Wood Tilted Turret.

MILLING MACHINES.

No. 1 U. S. hand, vise and arbor, new.

No. 3 LeBlond plain, with dividing head, used.

No. 3B Owen plain, with vertical attachment and dividing head, used.

No. 3 Garvin, hand, used.

No. 2 Pratt & Whitney, Lincoln type.

PRESSES.

No. 1 Bauroth, o. b. i., new.

No. 3 Loshbough-J., o. b. i., new.

No. 4 Loshbough-J., o. b. i., new.

No. 3 Kohler, o. b. i., used.

No. 51 Swaine, used.

No. 19 Bliss, o. b. i., used.

No. B. Rockford, o. b. i., used.

SAWS.

Nos. 1 & 2 Marvel, draw cut, new.

No. 1 Racine high speed, new.

GRINDERS.

Nos. 1, 2 & 3 Western, d. e., new.

Nos. 1, 2 & 3 St. Louis, d. e., new.

No. 20 Safety E. W. Co., elec. (4).

U. S., electric, 110 v., d. c., bench.

Hald, ring, 8", used.

Essley, cylindrical.

No. 2 Ohio, universal cutter & tool,

used.

COMPRESSORS.

Nos. 2, 3 & 4 Model B, vert., belted, new.

Norwalk, steam, 1000 cu. ft., used.

Ingersol-Sergeant, steam 800', used.

Ingersol-Sergeant, steam 525', used.

MISCELLANEOUS.

Brake, 6' Dreis & Krump, 16 ga.

Motor, 10 h. p. Wagner, 60 cy., 3 p.,

440 x., 850 r. p. m., used.

Pipe mch., No. 86 Forbes, 4", used.

Pipe machine, 3" Borden, hand.

Planer, 36"x36"x12' Patch, o. s., 1 hd.

on cross rail. 1 head on side, used.

Large stock of tinners' tools.

CHUCKS.

5" & 9" 3-jaw Sweetland, scroll, new.

8-12-14-16" 4-jaw Sweetland, inde-

pendent, new.

No. 18 National Acme, s. o., die hd.

5", 6", 7", 9" 3-jaw Cushman, univ.,

used.

16" 4-jaw Wescott, combination, cut-

ting off.

SECOND-HAND MACHINERY

FOR SALE BY

The Enterprise Machinery Co.,

25-30 S. Clinton St., Chicago

All sizes boilers, compressors gas engines, steam engines and pumps.
Band saws, 26" 36".
Boring mills, vert., 30" and 78".
Drills, 3 sp. and 4 sp. Dwight Slate.
Fox lathe, 24" wire feed, like new.
Gear cutter, auto., 36" spur & bevel, will trade for other machinery.
Hammer, Morgan, 1600 lb.
Lathe, bench, 7" x 12" centers, 4" h s., c. r., screw cutting 3-144, collets, taper, new.
Lathe, 30" x 12", compound rest, \$295.

Pipe threader, 4".
Planer, 24" x 6", \$285.
Planers, 24", 30", 36" and 42".
Punch pr., bench pwr., 1 1/2" str., new.
Punch press, No. 2, o. b., \$160.
Punch press, Nos. 2, 3 and 4.
Radial, 42" No. 5, taper, good cond.
Screw machine, 1/2" Foster.
Screw machine, auto., 1/2".
Shears, 36" to 96", power, new.
Shear, 36", 15" gap, 18 gauge.
Speed lathes, \$18, back gear, \$35.
500 Other tools. Write us.

FOR SALE BY

Federal Machinery Sales Company,

8 N. Jefferson St., Chicago, Ill. 212 Sycamore St., Milwaukee, Wis.

USED and NEW Tools.—Immediate shipment.

DRILLING MACHINES.

New Silver 20" stationary head drills, (6).
New Cleveland 36" sliding head drill, b. g., p. f.
New Snyder 28" sliding head drill, b. g., p. f.
New Henry & Wright 1, 2, 3, 4 and 6-spindle ball bearing drills, (20).
New 3" Mueller heavy plain radial drill.
Used 5' Bickford full universal radial, s. p., gear box drive.

GEAR SHAPERS.

Used 24" Fellows. | Used 36" Fellows.

GRINDERS.

New No. 1 Grand Rapids universal cutter and tool grinder.
New No. 2 Gardner ball bearing disc grinder.

LATHES.

New Dalton type B-4, 6" x 36" bench lathes on legs, (6).
New Oliver 16" x 7" q. c. g. engine lathe.
Used Flather 17" x 6" q. c. g. engine lathe.
New National 17" x 8" q. c. g. engine lathes (2).
New 18" x 8" Hollingsworth standard engine lathes, one with taper, (2).
New National 18" x 8" quick change gear engine lathes, (4).
New Reed 22" x 13" engine lathe. s. b. g., h. s., c. r.
Used 36" Stevens pulley lathe.
Used New Haven 60" x 20" bed triple grd. engine lathe, raising blocks to 75 1/2".

MILLING MACHINES.

Used No. 2 Cincinnati plain milling machine.
Used Carter & Hakes No. 2 Lincoln miller.

PLANERS.

Used Enterprise 30" x 30" x 16" planer, one head.

PIPE MACHINE.

Used Victor 4".

PRESSES.

New Nos. 18, 19, 20, 21 and 21-B Bliss o. b. i. presses.
New Style C-3 Ferracute open back inclinable presses, (3).

SHEARS AND SAWS.

New Peck, Stow & Wilcox No. 137-A foot power squaring shear.
New 52" Peck, Stow & Wilcox No. 223 power squaring shear, for 14 gauge.
Used Ohl 10' power squaring shear, No. 12 gauge.
New 6" No. 3 Burr cold saw.

SCREW MACHINES AND TURRET LATHES.

Used 14" Pierce turret lathe.
Used 14" Pierce universal Fox turret lathe.
1" x 5" Pierce plain head screw machine.

Above list is incomplete. Write us, giving specifications of anything required.

SECOND-HAND MACHINERY

FOR SALE BY

Simmons Machine Co., Inc., Albany, N. Y.
 1001 Singer Bldg., New York 358 Ellicott Square, Buffalo
 804 Dime Savings Bank Bldg., Detroit

Partial List of Equipment for Immediate Delivery

MILLERS.

No. 2 Owen plain.	No. 3-B Owen plain.
No. 3-H LeBlond universal, new.	No. 4 LeBlond plain.
No. 2 Garvin duplex.	Model C Becker vertical.

GRINDERS.

No. 5 Brown-Sharpe universal.	No. 3, 4, 5, self-contained c. s. new, (2).
No. 23 Brown-Sharpe internal.	Springfield wet grinder.
Dumore electric, new, (8).	4", 8", 1" and 14" emery stands.

LATHES.

14"x 5' Putnam.	28"x12' Boye & Emmes.
14"x 6' Lodge-Shipley.	30" English lathe.
18"x 6' American.	34"x18" Pond.
20"x 8' American.	38"x14' David W. Pond.
20"x 8' Fitchburg.	42"x12' Fifield, triple geared, (3).
20"x 8' Pond.	24"x36" Marvel lathes, (2).
20"x10' Monarch, new.	

PLANERS.

36"x36"x8' Pond, two heads.
 Used 38"x38"x8'6" Planer, one rail head, one side head.
 Reliably 39"x33"x10 Cincinnati, one head.
 New 42"x42"x12' openside, one rail head, one side head.
 Reliably 60"x48"x13' Lincoln, 4 heads, Sellers spiral gear drive.
 Reliably 73"x48"x13' Lincoln, 4 heads, Sellers spiral gear drive.
 Used 14' Hilles-Jones plate planer.

DRILLING MACHINES.

Moline "Hole Hog", (3).	3-spindle Sipp high speed sensitive.
3' Drees plain radial.	26" Barnes, sliding head, (3).
5' Bickford radial.	U. S. portable electric radial.
6' Prentice radial.	No. 101 Canedy-Otto 34" radial, new.
36" Snyder.	No. 1 Burke bench drills, new, (3).
7'3" Warren semi-universal radial.	26" Snyder upright.

AUTOMATICS.

2" Cleveland Model "A" 5-hole turret (2).	4" National Acme auto., four spdl.
2" Cleveland auto., 5-hole turret, (2).	No. 55 National Acme auto., (2).
	No. 52 National Acme automatic.

SCREW MACHINES AND TURRET LATHES.

3"x36" J. & L., bar and chuck., (2).	20"x8' Bridgeport turret lathe.
No. 324 Garvin turret lathes, (4).	Conradson turret lathe, 24" swing.

BORING MILLS.

37" Niles, two heads.	34" King vertical, swing 36".
36" Bridgeport, with two heads.	48" Niles car wheel borer.

MISCELLANEOUS.

Arbor press, Greenerd No. 5.	Presses, power, Nos. 1, 2, 3 Sidney, new, (2).
Dictaphones—Ediphones (8), and 1 shaving machine with motor.	Profilers, Nos. 3 & 4 Garvin.
Gear cutter, No. 2 Whiton.	Saw, 4" Cochrane-Bly.
Hack saws, No. 1 Racine hi-spd., (8).	Shear, Lennox rotary bevel.
Pipe machine, 2" Jarecki No. 7.	Shear and punch, 24" Niagara deep throat, hand lever.
Pipe machine, 8" Cox.	
Presses, foot, Perkins, (2).	

WOOD-WORKING MACHINERY.

Band saw, 36".	Sander, vertical.
Borer, universal.	Sander, 3-roll drum, Fay & Egan.
Jointer, 16" Greaves-Klusman.	Shaper, 2 spindle.
Planer, pony, 24".	Swing saw.
Router, New Britain No. 2 chain.	

SECOND-HAND MACHINERY

FOR SALE BY

Chas. Molitor Machinery Co.,

124 S. Clinton St., Chicago, Ill.

Special Bargains

Boring mill, 30" Colburn.
Boring mill, 30" Baush.
Boring mill, 36" Bullard, 2 heads.
Corrugating machine, 10", heavy.
Drill, 24" Mechanics, sl. hd., b. g.
Drills, 32" Mechanics, sl. hd., b. g. (2).
Drills, 1-sp. Avey hi-spd., 1/2" cap., (3).
Drills, 2-sp. Avey hi-spd., 1/2" cap., (6).
Drills, 4-sp. Henry & Wright, high speed, capacity 4" (6).
Lathes, 15"x8" South Bend, (12).
Lathe, 16"x8" Blaisdell, d. b. g.
Lathe, 18"x8" Fostick, double back gear, quick change, taper.

Lathe, 18"x8" Reed.
Lathe, 20"x10" Rahn-Larmon, q. c.
Miller, No. 2 Cincinnati plain.
Miller, No. 3 Cincinnati plain.
Miller, No. 2 Brown & Sharpe, pl.
Miller, No. 3 Brown & Sharpe, pl.
Miller, No. 3 Hendey plain.
Radial, 30" Fostick.
Radials, 48" Bickford, (2).
Shaper, 25" Milwaukee grd. crank.
Shear, pwr. sq., 10' Ohl., 3/16" cap.
Shear, power square, 6', 8 gauge.
Shear, foot pwr. sq., 10', 20 gauge.
Turrets, Foster (2), 1 with air chuck.

FOR SALE BY

The Osborne & Sexton Machinery Co.,

Columbus, Ohio

LATHES.

9" to 13" Barnes, h. s., cp. r., new.
13-15-16 and 18 O. & S., h. s. c. r., new.
13"x 5" LeBlond, hollow spindle.
16x6 Seneca Falls rel. att., q. c.
18"x 8" Fitchburg, hol. spdl., cp. r.

19"x12" Gray, compound rest.
20"x10" Hamilton, double back gear.
21"x10" and 24"x12" South Bend.
25"x24" Fildfield.
54"x18" Pond, old style.

TURRET LATHES AND SCREW MACHINES.

1" Garvin hand screw machine.
1 1/2" S. & K. hand screw mches., (3).
1 1/2" Tilted turret hand screw mche.

No. 6 W. & S. screw machine.
2x24 & 3x36 J. & L. dbl. equipment.
1/2" Hartford single spindle auto.

SHAPERS AND PLANERS.

14" Niles, traveling head.
16, 18 & 24" Barker, back gear crank.
16" Kelly crank, back geared.
20" Davis crank, pr. down feed.
20" Walcott geared shaper.

22"x22"x 6" Gray, 1 head.
24"x24"x 8" American, 1 head.
32"x32"x10" Niles, single head.
36"x36"x16" Pond, single head.
60"x60"x18" Betts, 3 heads.

PRESSES.

No. 5 Garrison, o. b. i.
No. 2 Sidney o. b. inclinable, 1600 lb.
No. 32-P Toledo, nearly new, (4).
No. 32 Toledo geared.

Pneumatic, 20 ton, 37" bet. uprights.
Perkins, dbl. crank, 16x24 bolster.
Bliss, 42,000 lbs. toggle drawing.
Covington, 10' 6" between housing.

DRILLS AND RADIALS.

Henry & Wright sgl. spdl., high spd.
8-spindle, gang, adjustable centers.
3 1/2" Canedy-Otto plain, new.
4" Baush plain, heavy pattern.
4 1/2" Universal, cone drive

Sensitive 1, 2 & 3 spindle.
High speed sgl. spdl. Cleveland.
20" Aurora, with tap. attachment.
24", 26" and 28" sliding head.
Quint 6-hole turret drill.

MILLING MACHINES.

No. 1 1/2 Valley City universal.
No. 4 Cincinnati plain.
No. 1 1/2 American plain.

No. 1 1/2 Valley City plain, new.
No. 3 Brainard, 30x7 table.
42"x42"x10" Lincoln slab miller.

GRINDERS.

12"x36" Hartford, surface, new.
Landis 10x24 universal.
Litter 10x20 universal.

30x10 Webster & Perks, univ., new.
Cutter, reamer and tool, new.
Cincinnati cutter and tool.

MISCELLANEOUS.

Balancing machine for pulleys.
Band saws, metal, 30" Wright, (2).
Boring mill, 12", 2 swivel heads.
Boring mill, 32" Baush, turret head.
Bulldozer, No. 25 W. & W.
Compressor, 8"x8" H. & B. belt.
Cut-off machine, 3" Davis.

Hammer, 55 Williams White Justice.
Motor, 75 h. p., 220 volt, 3 phase.
Pipe machines, 2, 4 & 6" Oster, new.
Punch & shear, No. 3A Royersford, double end.
Straightening rolls, 57" for 1/2 plate.

SECOND-HAND MACHINERY

FOR SALE BY

Stocker-Rumely-Wachs Co., 117-121 N. Jefferson St., Chicago

In stock for immediate delivery.

BORING MILLS.

- 60" Bullard, with two swivel heads.
- 24" Bullard, with turret head and side head.

DRILLING MACHINES.

- Rockford bench drill.
- 14" Washburn sensitive.
- 14" Rockford sensitive
- Allen single spindle ball bearing.
- Taylor & Fenn single spindle high speed.
- 16" Cincinnati.
- 24" Fosdick radial.
- 34" Hamilton, tapping attachment, speed box drive.
- 6" Gang radial.
- 14" Leland-Gifford 3-spindles.
- 14" Woodward & Rogers, 4-spindles.
- 14" Rockford, 4-spindles.

GEAR CUTTERS.

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|--------------------------------------|--------------------------------------|
| No. 2 Standard. | 30"x 8" Gould & Eberhardt, spur grs. |
| 25"x 7" Gould & Eberhardt, spur grs. | No. 3 Farwell gear hobber. |

GRINDERS.

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|-----------------------------|-------------------------|
| 12"x48" Modern cylindrical. | No. 6 Modern, internal. |
| 16"x66" Landis plain. | No. 7½ Gardner, disc. |

LATHES.

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|----------------------------------|--------------------------|
| 12"x 7" South Bend, c. r. | 28"x18" New Haven, c. r. |
| 18"x 6" Bradford c r | 36"x12" Blaisdell, c. r. |
| 22"x10" American, c. r. | 32"x18" Bradford, c. r. |
| 24"x12" Schumacher & Boye, c. r. | 37"x18" Fifield, c. r. |

MILLING MACHINES.

- No. 2 Cincinnati plain miller
- No. 2 LeBlond plain miller
- No. 15 Garvin plain, with vertical spindle attachment.
- No. 5-C Becker vertical, new
- No. 14 Pratt & Whitney 2-spindle profiler.
- Eynon-Ingersoll slab miller

PUNCHES AND PRESSES.

- No. 3 Bauroth, o. b. i.
- No. 21 Bliss o. b. i.
- No. 4 Loshbough-Jordan, o. b. i.
- No. 54½ Perkins sprue cutter.
- No. 2-P American Can.
- No. 16 Bliss horn press.
- No. 2-A Bliss double crank geared press, 10" stroke.
- No. 4-T American Can double crank geared press, 6" stroke.
- No. 205-H Toledo crank geared press, new, gap pattern, 96" bet. housings.
- No. 3 Ryerson geared punch, 4"x4".
- No. 7 Massillon, single end punch and shear, 36" throat, arch. jaws, capacity 1½" thru 1", new.

SCREW MACHINES.

- No. 2 Foster, plain head, a. c. & w. f.
- No. 6 Warner & Swasey, geared friction head, a. c. & w. f., power feed to turret slide.
- No. 6 Foster, friction, a. c. & w. f., power feed to turret.
- No. 9 Bardons & Oliver geared friction head, a. c. & w. f., power feed to turret and cut-off slides.

MISCELLANEOUS.

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|-----------------------------|--------------------------------|
| Shaper, 16" Baker vertical. | Tapping machine, No. 2 Garvin. |
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SECOND-HAND MACHINERY

FOR SALE BY

J. L. Osgood,

45 Pearl St., Buffalo, N. Y.

Chucking lathe, 21" P. & J.....\$ 350.

Screw machine, No. 5 W. & S. \$ 375.

Screw machine, 1" x 10" P. & W.
hexagon turret..... 250.

Shell cutting-off mche., 14" Williams
Turret lathe, 12" B & S..... 200.

FOR SALE BY

Strafer Machinery Co.,

318 N. Front St., Baltimore, Md.

Grinder cylinder, No. 60 Heald.

Keyseater No. 2 Mitts & Merrill, with equipment.

Lathe, 18" x 8' South Bend.

Lathe, 38" x 14' New Haven, power angular feed.

Planer 28" x 28" x 8' New Haven.

Planer 36" x 36" x 8' Woodward & Powell.

Sold on approval, money back if not satisfied.

FOR SALE BY

Dale-Brewster Machinery Co., Inc.,

541-7 W. Washington Blvd., Chicago; 54-60 Lafayette St., New York

In Stock At Chicago

NEW

LATHES.

26" x 12' Wickes, d. b. g., q. c. g.

24" x 13' Chard, d. b. g., q. c. g.

20" x 9' Chard, d. b. g., q. c. g.

18" x 9' Chard, d. b. g., q. c. g.

18" x 8' Cisco, d. b. g., q. c. g.

14" x 6' Cisco s. b. g., q. c. g.

13" x 6' Lancaster standard.

13" x 5' South Bend standard.

12" x 4' 6" Cleveland precision, (2).

6" x 30" Dalton bench, s. b. g.

DRILLING MACHINES

36" Snyder, sliding head.

30" Snyder, sliding head.

28" Snyder, sliding head, (2).

25" Snyder, sliding head, (3).

25" Silver, sliding head

23" Snyder, stationary head, (8).

20" Canedy-Otto, p. f., b. g., (2).

20" Canedy-Otto, wheel and lever.

20" Silver, wheel and lever, (2).

14" U. S. sensitive.

Detroit 1-spindle, h. s., b. b.

Detroit 2-spindle, h. s., b. b.

No. 32-D Demco 1-spdl., h. s., b. b.

No. 32-D Demco 2-spdl., h. s., b. b.

No. 32-D Demco 3-spdl., h. s., b. b.

No. 30-A Demco, bench, h. s., b. b.

No. 22 Demco bench, h. s., b. b.

Dumore electric hand drills.

Willey electric hand drills.

Various sizes and types bench drills.

GRINDERS

Cleveland profile grinder.

No. 1 Grand Rapids universal.

No. 3 Modern universal, (4).

No. 3 Wilmarth & Morman, surface.

No. 2 Norton cutter and reamer.

Hacker "All-Angle" tool room.

No. 3 W. & M. surface grinder.

No. 1 LaSalle plain and surface.

24" Milwaukee wet tool.

No. A-1-T Grand Rapids, drill.

No. B-2-T Grand Rapids, drill.

Partridge grinders, all sizes.

Wilmarth & Morman J-A point

drill grinder.

Dumore grinders, 110-220.

MISCELLANEOUS.

Arbor presses, Atlas, all sizes.

Band saw, 10x10 Napier.

Filing mach., Barry, bench and floor.

Filing machine, motor driven, bench.

Gear hobber, No. 3 Farwell.

Hack saws, 6x6 Peerless.

Hack saws, 9x9 Peerless.

Hack saws, No. 1 & No. 2 Marvel.

Hack saws, No. 1 Racine.

Miller, No. 1-B Fox plain.

Miller, No. 2-B Fox plain, p. f.

Miller, No. 2-A Fox universal.

Miller, No. 2 Cleveland universal.

Punch press, No. 1 Rockford.

Punch press, Rockford style B.

Punch press, No. 4 Rockford.

Shapers, 16" Barker, (2).

Shaper, 16" Walcott.

USED

Boring mill, 42" King.

Cold saw, Higley.

SECOND-HAND MACHINERY

FOR SALE BY

Harris Brothers Company, • 35th & Iron Sts., Chicago, Ill.

ENGINE LATHES.

17"x20' Linderman double spindle shell lathe.
18"x 6' Fay & Scott.
18"x12' New Haven.
20"x 8' Pond.
24" Potter & Johnston.
Niles 48" double end car wheel turning lathe.

SCREW MACHINES.

Nos. 5-A & 6-A Potter & Johnston.	½" Pratt & Whitney double spindle automatic.
1" Kempsmith hand screw machine.	
1½, 2" and 2½" Cleveland automatics.	

SHAPERS.

Pedrick & Ayer, open side, traveling head, 20" stroke.
27x27 New Haven planer.

PUNCH PRESSES.

No. 4 Bliss, solid back, b. g.
Queen City, solid back, 5½" throat.
Queen City, solid back, 9½x9" horn.

SHEARS.

Weiner & Pels steel plate angle and I-beam shear, for 15" beams.
Single end shear, 22" throat, punches 1½" thru 1".
Single end shear, 11" throat, shear 8"x1½".
Double end punch, Long & Allstatter, 24" throat one side, 8" throat other side, capacity 1" thru 1".
Alligator shears, 1 each for 1", 2" and 2½".

DRILL PRESSES.

Bausch & Lomb spindle universally adjustable sliding head multi-spindle drill.
20, 26 and 28" upright drills, (3).
2 spindle Hoefler adj. gang drill, No. 5 Morse taper in spindls., table 18"x56".

MILLING MACHINES.

- 1 Newton adjustable horizontal type duplex milling machine, maximum distance between ends of spindles 90", maximum distance from center of spindles to top of table 35", width of table 42", length of table 12'. Motor drive. Machine practically new. Weight 60,000 lbs.
- 2 No. 6, 48" swing vertical Becker latest type improved standard milling machines; all power feeds, longitudinal 62"; transverse, 20"; vertical 20"; power down feed to spindle head, 12", power feed to rotary 24".

BENDING ROLLS.

Power bending rolls, 10' long, for 3/16" plate.
Boilermakers' plate flanging clamp, 12' long.

PIPE MACHINE.

4" Armstrong pipe machine.

HAMMER.

50-lb. Novelty trip hammer.

MISCELLANEOUS.

Buffing stands, (20).
Cold saw, No. 21 Higley.
Cold saw, Q. & C., for 8" rounds.
Gate shear or multiple punch, 60" Queen City.
Gear cutter, 60" Niles semi-automatic spur.
Grinders, double end heavy floor, for 24x4" wheels.
Grinder, Middleditch combination drill and tool.
Hydraulic presses, 60 and 80 ton, vertical.
Keyseater, 1" Morton.
Nut tapper, No. 4 Rodd automatic.
Steel brake, Dreis & Krump, 10', for 18 gauge.

SECOND-HAND MACHINERY

FOR SALE BY

J. L. Lucas & Son, Inc.,

No. 3 Fox St., Bridgeport, Conn.

DRILLING MACHINES.

No. 28 Canedy-Otto, bench.
34" Canedy-Otto radial, \$615.
28" New Haven, \$400.

Beaman & Smith horizontal boring,
drilling and milling machine.

GRINDERS.

R. Hoes surface, with mag. chk., \$250. | Type D Diamond, surface, \$450.

HAMMERS.

600 lb. Bliss, board, \$850. | 500 lb. Mossberg & Granville auto-
210 lb. Farrel Foundry. | matic, \$850.

LATHES.

20"x 8' Roulsted, used, (12), \$550 ea. | 48"x20' Seth Wilmarth.
34"x16' Michel. | 48"x24' Putnam.

FOR SALE BY

The O'Brien Machinery Co.,

119 N. Third St., Philadelphia, Pa.

Drill, 26" Barnes.
Drill, 32" Aurora.
Drill, 8-sp. Baush adjustable mult.
Gas furnace, No. 38 American.
Gear shaper, 36" Fellows.
Grinders, Pratt & Whitney vertical
surface, (2).
Grinder, Gisholt, cutter.
Hammers, 50 lb. upright belt, (2).
Lathe, 16"x9" Lehmann.
Lathes, new 18"x8" Rockford, (5).
Lathe, 18"x9" Lehmann.
Lathe, 24"x12" Hamilton.
Lathe, 26"x14" American.
Lathe, 26"-48"x14" McCabe dbl. sp.
Lathe, 35"x18" Bement.
Miller, No. 1 Dow plain.
Miller, No. 15 Garvin plain.

Planer, 24"x24"x 6' N. Y. Safety.
Punch and shear, sgl. end new, cap.
4x3 flat, 1" rd., punch 1" in 1" iron.
Punch, single end, 32" throat, Hillis
& Jones, cap. 1 1/2" hole in 1 1/2" iron,
No. 4 type.
Press, No. 3 Henderson solid back,
weight 3300 lbs.
Punch and shear, dbl. end new, cap.
punch, 1" in 1" ; cap. shear, 1 1/2" rd.,
1x5" flat; weight 3,600.
Punch press, power, deep throat.
Saw, heavy type, cold.
Shaper, 12" Bement.
Shaper, 16" Smith & Mills, b. g.
Spinning lathe, 44" swing, hvy. duty.
Turret lathes, 3"x36" Jones & Lam-
son, flat (3).

FOR SALE BY

Peninsular Machinery Co.,

281 E. Jefferson Ave., Detroit, Mich.

Drill, 10" Hoeler, friction disc.
Drill, 20" Rockford, back geared.
Drill, 23" Rockford, back geared.
Drill, 24" Rockford, sliding head.
Drill, 24" Fosdick radial.
Drill, Pierle high spd. ball bearing.
Gear cutter, No. 3 Brown & S. auto.
Grinder, 16"x26" Queen City cyl.
Grinder, No. 1 LeBlond univ. cutter.
Grinder, No. 2 Grand Rapids, drill
and tool.
Grinder, No. 1 Blount, double end
emery.
Grinder, No. 6 Blount, d. e. emery.
Groover, No. 3 Niagara.
Lathe, 11"x 4' Blount speed.
Lathe, 14"x 6' LeBlond engine.
Lathe, 16"x 6' LeBlond engine.

Lathe, 17"x 8' LeBlond rap. produc.
Lathe, 17"x10' LeBlond automobile.
Lathe, 18"x 8' LeBlond engine.
Lathe, 18"x8' LeBlond engine, quick
change gear, motor drive.
Lathe, 20"x10' LeBlond engine.
Lathe, 23"x12' LeBlond engine, h. d.
Lathe, 30"x16" Pond.
Miller, No. 24 LeBlond universal.
Miller, No. 3H LeBlond universal.
Planer, 24x24"x6" Rockford, sgl. hd.
Planer, 28x28"x8" Rockford, sgl. hd.
Planer, 30"x30"x18" Rockford, 2 hds.
Planer, 54"x54"x30" Betts heavy pat-
tern, reversing motor drive.
Shaper, 16" Rockford, back geared.
Shaper, 20" Rockford, back geared.

SECOND-HAND MACHINERY

FOR SALE BY

H. D. Warner,

57 May St., Hartford, Conn.

Automatics, No. 00 B. & S., (6).
Automatics, No. 0 B. & S., (6).
Automatics, No. 2 B. & S., (6).
Automatic, 1" Cleveland.
Automatic, 1 1/2" Cleveland.
Automatic, 2 1/2" Cleveland.
Automatics, 3 1/2" Cleveland, (2).
Broaching mchs., No. 2 Lapointe, (3).
Drill press, 3-spindle Allen.
Drill press, 4-spdl. Norton & Jones.
Drill press, 4-spindle Barnes.
Forming machine, No. 00 B. & S. automatic turret.
Gear hobber, Gould & E., 24"x10".
Grinder, No. 2 Landis universal.
Hammer, steam, 600 lb. Niles-Bement-Pond, nearly new.
Hammer, steam, 1,000 lb. Niles-Bement-Pond, nearly new.
Hammers, steam, 1,200 lb. Niles-Bement-Pond, nearly new, (2).
Header, 1" Acme hot bolt.
Hammers, board lift drop, 400 lb. Billings & Spencer, nearly new, (6).
Hammers, board lift drop, 600 lb. Billings & Spencer, nearly new, (7).
Lathe, J. & L., sliding head, 2"x24".

Lathe, J. & L., sl. hd., tur., 3"x36".
Miller, No. 4-B Becker vertical.
Millers, Becker No. 7-H Lincoln, (6).
Millers, P. & W. Lincoln, (6).
Millers, Briggs type A, (2).
Pickling machine, automatic.
Presses, No. 194 Bliss, (25).
Presses, No. 20 Bliss, (50).
Press, No. 774 Bliss.
Press, No. 784 Bliss.
Press, No. 55 Toledo, 1" stroke.
Press, No. 56 Toledo geared, 4" str.
Press, embossing, No. 26 Bliss.
Press, embossing, No. 27 Bliss.
Profilers, P. & W. 2-spindle, (4).
Rivet spinners, Grant, (4).
Rotary annealing furnace, American Gas Furnace Co.
Screw machine, No. 3 P. & W., hand.
Screw mchs., 2 1/2" 4-spdl. Gridley, (6).
Screw mchs., 2 1/2" 6-sp. New B., (4).
Shear, alligator, to cut 14" square cold steel.
Threading machines, type 2 Geometric, (4).
Tote boxes, metal, assorted sizes (15,000).

FOR SALE BY

Herman L. Winterer,

943-53 N. Front St., Philadelphia, Pa.

LATHES.

31"x14' Niles, back geared, (2).
20"x8' 6" Walcott, q. c. g.
20"x8' Putnam.
19"x8' 6" Rahn Mayer, back geared.

18"x8' Pond.
16"x6' Prentice, q. c. g.
And many others.

TURRET LATHES.

3"x36" Jones & Lamson, (2).
18" Gisholt.

7"x14" Potter & J. semi-auto., (2).
27" Chucking lathe.

DRILL PRESSES.

48" Universal radial.
40" Barnes horizontal radials, (2).
36" Bickford radials, circular base, motor driven, (2).

28" Snyder vertical, (2).
25" Weigel, with tapping att., (4).
20" Baker high speed, heavy duty, (3).

MISCELLANEOUS.

Boring mill, 38" Beaman & Smith.
Grinder, disc, No. 17 Besly.
Grinder, No. 14-12"x5" B. & S. plain.
Grinder, tool room, Heald univ.
Grinder, roll, 54"x10 1/2" Diamond.
Milling machine, No. 6 Becker-B.
Milling machine, No. 5B Becker-B.
Milling machine, No. 3 Becker-B.
Milling mche, No. 3 Hendey Norton.
Milling machine, No. 3 Brown & S.

Milling machine, No. 15 Garvin.
Milling machine, No. 1 Garvin univ.
Milling mch., No. 2A Kempsmith.
Milling machine, Whitney, hand.
Presses, No. 534 Max Ams arch, 5" stroke, (5).
Press, No. 2 D. T. Consolidated, 19" throat.
Presses, assorted sizes, (20).

BOILERMAKERS' AND SHIP MACHINERY.

Flanging press, 100-150 ton, with extra knockout plunger, platens 7'2" long and 4'2" wide, practically new.
Shear, 24" Hans Kraut beam, cuts from 3 to 24" beams, H. columns, channels and shapes, practically new.
Steam hammer, Dudgeon, 1,500 lb. capacity.

Large assortment of General Machinery.

Send for complete list.

SECOND-HAND MACHINERY

FOR SALE BY

Lehmann Machine Co., 608 S. Broadway, St. Louis, Mo.

ENGINE LATHES.

18"x10' Whitcomb-Blaisdell, actual swing 20", 3-step cone, double back geared with quick change gear box.

18"x10' Boye & Emmes, actual swing 19", 3-step cone, double back geared with quick change gear box.

12"x14' Greaves-Klusman, actual swing 23½", 5-step cone, single back geared.

All of the above tools are in A-1 condition.

FOR SALE BY

Badger-Packard Mch. Co., 133-139 W. Water St., Milwaukee, Wis.

LATHES.

16"x8' Flather, quick change.

18"x8' Cincinnati, quick ch., s. b. g.,

4-step cone.

24"x16' old type, loose change gear,

4 s. c., s. b. g.

18"x8' Fifield, loose chg., s. b. g., 4-st. c.

24" Pond rigid turret lathe.

24" Davis, friction b. g. turret head, boring and chucking lathe.

MISCELLANEOUS.

Air compressor, 8"x8" class N-SB Chicago horizontal.

Drill, 24" sliding hd. Sibley, b. g., p. f.

Exhauster, planing mill, No. 40

Sturtevant slow speed.

Feed water heater, 24"x8' 8" open pattern.

Grinder, No. 1½ Cincinnati universal tool and cutter.

Grinder, No. 2 B. & S. univ. cyl.

Grinder, 72" Holmes auto. knife.

Grinder, No. 3 Oesterlein "Ohio" universal and tool.

Hammer, Star upright power, 35 lb.

Milling mch., No. 6 Brainard, Lincoln type, pwr. longitudinal feed.

Planer, 24"x24"x16' Fitchburg.

Oven furnace, No. 1 Stewart, with blower.

Oven furnace, No. 27 Stewart, without blower.

Punch, style M Badger rapid action, 6" throat, ½"x3½" cap.

Purifier, 30"x6' Buffalo, closed pattern.

Rivet spinning machine, Grant, 110 v., d. c. motor driven, 3/16" cap.

Screw mch., ½"x3½" Hartford auto.

Screw machine, 1½" Cleveland auto.

Screw mch., 2½"x4½" Pratt & Whitney auto., with c. s.

Screw mch., 1½"x17" Hartford auto.

Steam pump, 5"x2½"x6" Whittier duplex.

FOR SALE BY

W. J. Baird Machinery Co., 265 Jefferson Ave., Detroit, Mich.

Boring mill, Lambert horizontal, 3" bar, new.

Boring and facing mill, Beaman & Smith 2-spindle horizontal, used.

Drill press, 24" Aurora, sliding head, back geared, power feed.

Grinder, No. 2 Bath universal, complete, used.

Grinder, automatic surface, No. 2 Wilmarth & Morman, new.

Grinders, double end disc, 18" No. 7 Valley City, new, (2).

Grinder, No. 1 Fraser universal, complete with internal grinding attach., new.

Miller, No. 2 Rockford universal, high-powered, all-geared, new.

Miller, No. 2½ Rockford universal, high-powered, all-geared, new.

Planer, 22"x22"x5' Wheeler, second-hand but in good condition.

Planer, 30"x30"x8' Gray, used.

Planer, 36"x36"x20' Gray, used.

Planer, 42"x42"x10' Davis & Egan, used.

Punch press, power, No. 3 Loshbough-Jordan, open back inclinable.

Punch press, power, No. 5 Loshbough-Jordan, open back inclinable.

Punch press, power, No. 5 Loshbough-Jordan, geared, open bk. inc., new.

Screw machine, ½" Cleveland automatic, 5-hole turret

Screw machine, 2½" National Acme 4-spindle automatic.

Screw machine, hand, ½" Mullholland.

Shaper, 24" Hollingworth, back geared crank.

Shapers, 28" Queen City, helical cut, back geared crank, (2).

SECOND-HAND MACHINERY

FOR SALE BY

Frank Toomey, Inc.,

127-131 N. Third St., Philadelphia, Pa.

LATHES.

13"x 7'6" new Carroll-J., pln. chg.
14"x 6' new Carroll-Jamieson, q. c.
15"x 6' new Sidney, q.c., swings 17".
16"x 8' Hendy, q. c., taper attach.
16"x24' new Rahn Larmon, d.b.g., q.c.
17"x 8' new Sidney, q. c., swings 19".
19"x 8' new Sidney, q. c., swings 21".
20"x12' Hendy, q. c., taper attach.
25"x14' new Sidney, q. c., swings 27".

TURRET LATHES.

24" Davis chucking. No. 1 Bardons & Oliver, screw.

VERTICAL BORING MILLS.

60" Bullard, two heads. 64" Niles, two heads.

PLANERS.

36"x36"x 8' Gray, two heads.
30"x27"x 8' Smith, one head.
27"x23"x 6' Smith, one head.
18"x 8"x 3' Wheeler, one head.

SHAPERS.

16" new Steptoe, b. g.
20" new Steptoe, b. g.
24" new Steptoe, b. g.
34" Hendy.
16" Barker, traveling head.

MILLING MACHINES.

No. 4 Brown & Sharpe, plain.
No. 3 Cincinnati universal.
24"x7'x18 Oesterlein, plain.
No. 1½ new American, plain.
No. 0 Steptoe, hand, new.

GRINDERS.

No. 1 Fraser universal, new.
No. 1 Grd. R., new cutter & reamer.
No. 1 Landis internal.
No. 190 Wells.

DRILLING MACHINES.

60" Bickford radial.
48" Fosdick radial.
36" new Superior, sliding head.
32" new Superior, sliding head.
28" new Superior, sliding head.
25" new Superior, sliding head.

FOR SALE BY

Wm. C. Johnson & Sons Machinery Co.,

1001-3-5 N. Sixth St.,

St. Louis, Mo.

LATHES.

14"x 6' Hendy.
14"x 6' Whitcomb-Blaisdell.
14"x 6' Lodge & Shipley.
15"x 6' Von Wyck.
18"x 8' American.
18"x 8' Mueller.
18"x 9' Chard.
20"x 8' Lodge & Shipley, geared hd.
21"x10' LeBlond, heavy duty.
22"x10' Davis, heavy duty.
26"x10' Walcott.
22"x22' old style.
3"x36" Jones & Lamson.

SHAPERS AND PLANERS.

12", 14", 16", 20" and 24" shapers.
14"x14"x20' planer.
24"x24"x6' Pease planer.

DRILLING MACHINES.

16" 2-spindle Avey.
16" 6-spindle Allen.
16" Elmore, high speed.
20" Barnes.
24" Henry & Wright, high speed.
D4 Colburn, heavy duty.

MILLING MACHINES.

No. 3 Burke, bench.
No. 0 Bickett, vertical.
No. 2 Knight, vertical.
Fox hand miller.
No. 5 Cincinnati, plain.
28" Cincinnati, semi-automatic.
No. 2 Pratt & Whitney, Lincoln.
No. 2½ Rockford, universal.

MISCELLANEOUS.

Bolt cutter, 1½" Acme.
Bolt cutter, 1½" National.
Bolt header, 1½" Blakeslee.
Bulldozer, No. 3 Fisher.
Fox monitor lathe, Lodge & Davis.
Gear cutter, 28" Cincinnati.
Grinder, No. 38, plow-share.
Hammer, 40 lb. Bradley.
Hammer, steam, 250 lb. Morgan.
Hammer, steam, 350 lb. Bement-M.
Pipe machine, 6" Forbes.
Press, No. 40 Swaine.
Press, No. 42 Toledo, horn.
Screw machine, 1" Pratt & Whitney.
Upsetting machine, ½" Waterbury-
Farrel.

Guaranteed Machine Bargains

- 2—No. 4 Warner & S. Turret Lathes, complete with grd. fr. hd., oil pump and wire feed, power feed to turret; practically new.
- 2—No. 4 Warner & Swasey Universal Turret Lathes, complete.
- 2—No. 2 Warner & Swasey Turrets, complete; power feed to turret.
- 10—No. 6 Warner & S. Turret Lathes, complete with grd. fr. hd., oil pump and wire feed, to the turret; practically new.
- 1—65N Bliss Cam Drawing Press, standard rim.
- 1—19 Bliss Press Geared with gravity feed.
- 1—No. 2 Brown & Sharpe Universal Grinder.
- 1—No. 1 Landis Internal Grinder.
- 1—No. 0 Brown & Sharpe Automatic Screw Machine.
- 1—4" Gridley 4-Spindle Automatics, as good as new.
- 1—Each Nos. 53, 54, 55 & 56 National Acme, 4-spindle.
- 1—24" Gridley Automatics, 4-spindle.
- 1—No. 4—45" Brown & Sharpe Automatic Gear Cutter.
- 2—23" Hoefler Drills.
- 2—4 spindle, 20" Barnes all geared drills.
- 2—24" Barnes Single Spindle all geared drills.
- 1—24" Prentice all geared drill.
- 1—28" Hoefler Drill.
- 1—28x10" Boye Emmes Engine Lathe, q. c., d. b. g.
- 5—Porter-Cable Lathes.

M. J. Walsh Mchy. Co., 141 Sycamore St., Milwaukee, Wis.



Hitchcock's List

Goes to the Heart of 96% of
the Best Plants in the Country

The above statement is the result of careful mail inquiries directed to thousands of the larger tool-using concerns.

Hesitate and you are Lost!!

NOTE:—We offer the BEST available rebuild equipment at "adjustment period" prices—

Buy Now!

AUTOMATICS

(2) No. 2 BROWN & SHARPE AUTOMATICS, used two weeks.

PRESSES—Single Acting

(6) No. 540 MAX AMS, geared, 8" stroke, 18" betw. uprights, weight 5600 lb.

(2) No. 6 FARRELL, Straight Sided, geared, 5" stroke, 16" bet. housings.

PUNCHES AND SHEARS

No. 7 HILLES & JONES MULTIPLE PUNCH or Shear, shear blades 46", approximate weight 50,000 lbs.

CARLIN ALLIGATOR SHEAR, 12" blade, 14" cap.

NEWBOLD ROTARY SPLITTING SHEAR, 1" capacity.

HAMMERS

250 TON MESTA, Steam Hydraulic, Quick Acting, Forging Press, total stroke of ram 21", good as new.

1500 lb. BLISS, board drop.

1500 lb. UNITED ENGINEERING CO., Board Drop.

450 lb. BELL, open frame, steam.

60 lb. YEAKLEY Pneumatic.

LATHES

52"x22" WOOD LIGHT, triple geared, face plate drive.

50"x20" POND, triple geared, face plate drive.

38"x14" FAY & SCOTT, heavy duty, 3" hole in spindle.

30"x12" ISRAEL JOHNSON, heavy duty, triple geared, face plate drive.

28"x12" FAY & SCOTT.

20"x8" LODGE & SHIPLEY, geared head, single pulley drive.

SHAPERS

28" SMITH & MILLS, crank, box table and vise, almost new.

24" GOULD & EBERHARDT, geared, crank, box table, excellent cond.

24" POTTER & JOHNSTON, back geared, crank, universal table.

24" HENDEY, box table and vise.

24" JUENGST, back geared, crank, box table and vise.

15" HENDEY, box table and vise.

10" GOULD & EBERHARDT, back geared, crank, box table and vise.

RADIAL DRILLS

6" BAUSH, box table.

5" BAUSH, motor driven.

5 1/2" NILES, semi-universal.

3 1/2" GANG, tapping, box table.

PLANERS

60"x48"x20" GLEASON, 2 swivel heads on cross rail, one side head.

48"x36"x16" DETRICK & HARVEY, open side, three heads.

48"x36"x10" OHIO, 2 heads.

36"x36"x14" CINCINNATI, 2 heads.

30"x30"x14" FLATHER, 2 heads.

Graves Machinery Exchange

Warehouse and R. R. Siding:
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THE MOTTCH & MERRYWEATHER MACHINERY CO

707-715 Lakeside Ave., N. W., Cleveland, Ohio

BRANCHES: DETROIT, CINCINNATI, PITTSBURGH

Offer the Following Desirable Tools

DRILLS.

1 No. 12 Leland-Gifford.

1 No. 3 Avey.

MILLING MACHINES.

No. 4-B Becker Vertical.

Type "A" Briggs.

1 No. 12 Leland-Gifford.

1 No. 3 Avey.

4 24[#] Reed-Prentice.

5 No. 310 Baker.

GRINDERS.

5 Blanchard Vertical Surface, Direct Motor Driven, 440 Volt current.

6 No. 6 Bryant Internal.

6 No. 18 Bryant Internal.

1 No. 1½ Cincinnati Cutter and Tool.

6 No. 60 Heald Cylinder.

8 Garrigus, 10[#] Magnetic Chucks.

1 14x36 Norton Plain.

8 No. 205 Rivett Hand Oscillating.

LATHES.

6 8[#]x60[#] Lo-Swing.

No. 4-B Becker Vertical.

Type "A" Briggs.

No. 2 Cincinnati Plain, Cone Type.

No. 3 Cincinnati Plain Standard Hi-Power Type.

8[#] Pratt & Whitney Automatic.

10[#] Pratt & Whitney Automatic.

No. 6 Whitney Hand Miller.

MISCELLANEOUS.

2 Automatics, ¾[#] - ½[#] Plain Cleveland.

1 Chucking Machine, 1[#]x7[#] Acme Plain.

6 Flat Turret Lathes, 3¼x36[#] Acme.

3 Piston Ring Machines, Gridley, Plain, with Full Equipment.

2 Piston Ring Machines, Gridley, Eccentric, with Full Equipment.

2 Piston Ring Machines, No. 1½ Potter & Johnston, Eccentric, with Full Equipment.

\$25,000 to \$50,000 Profit Per Year

We make a 150 lb. Machine Tool. It is easy to make, profits are large, and we are swamped with orders—largely repeat orders. The business has been established for several years.

**We will Exchange for Machinery or
Will Sell at a Bargain**

Patents, jigs, business, and stock in process of manufacture. Will stand rigid investigation. Bank reference.

Consolidated Factories
30 South Clinton St., Chicago

Second Hand Machinery

DRILLING MACHINES.

No. 117 Moline "Hole Hog" heavy single spindle, (2).

ENGINE LATHES.

20"x8' Blaisdell, plain rest.

21"x10' LeBlond crankshaft
lathes, good condition, (2).

20"x13' New Haven, comp. rest.

24"x7' comp. r., turret on shears.

24"x12' Reed, c. r., solid spdl.

32"x16' Fay & Scott, c. r., turret
tool post, tur. on shears.

TURRET LATHES AND SCREW MACHINES.

1½" Gray turret lathe, back geared, pan bed, 18" swing.

3"x36" Jones & Lamson flat turret, bar equipment.

¾" Cleveland automatic.

¾", 1½" Hartford automatics.

SHAPER.

16" Steptoe shaper, plain crank.

MISCELLANEOUS.

Cold saw, 12" Burke.

Grinder, No. 1 Challenge.

Pipe machine, 3" Stoeber.

Punch and shear, No. 1-A New Doty.

Punch & sh., No. 10 New Doty.

Marshall & Huschart Machinery Co.

17 S. Jefferson St., Chicago, Ill.

915 Chemical Bldg., St. Louis, Mo.

Look Over This Exceptional List

First Class Machine Tools

Immediate Delivery

- 1-34"x24"x16' Cincinnati Planer, double head.
- 1-24"x24"x 6' Gray Planer, single head.
- 1-44"x44"x12' Gray Planer, 4 heads.
- 1-33"x33"x10' Knecht (Bickett) Planer, 4 heads.
- 1-36"x36"x12' Gray Planer, 4 heads.
- 1-36"x36"x24' Pond Planer, double head.
- 1-37' American Vertical Boring Mill, 2 heads.
- 1-36"x18' New Haven Engine Lathe.
- 1-No. 3 Long & Allstatter Heavy Geared Punch, 21" throat.
- 1-No. 57 Sellers Heavy Grd. Punch, 34" throat, 1 1/4"x1 1/4".
- 1-Heavy Beveling Shear, capacity 3/4" plate.
- 1-350 ton Niles Hydraulic Wheel Press, 84" capacity.

RADIAL DRILLS.

- 1-6' Niles Plain.
- 1-3' Drees plain, g. b. drive.
- 1-Heavy duty Baker drill, g. b. drive, Style 2 M.

AUTO. TURRET LATHES.

- 1-3" P. & W., geared head.
- 5-2x24 J. & L., geared heads.
- 1-3x36 J. & L., geared heads.
- 1-2"x24 Pratt & Whitney, grd. hds.
- 1-2" Cleveland automatic, 5 hole.
- 1-24" Cleveland auto., Model A.
- 1-14" W. & S. Turret.

MILLING MACHINES.

- 1-No. 2 Cincinnati universal.
- 2-No. 4 Cincinnati plain.
- 1-No. 2 Cincinnati plain, 3 step.
- 1-No. 2 LeBlond universal.
- 1-No. 1 B Milwaukee, s. p. drive.
- 1-No. 2 B Milwaukee, s. p. drive.
- 1-No. 2 A Milwaukee, s. p. drive.
- 1-No. 2 Becker, cone drive.
- 1-No. 3 B. & S. plain, s. p. drive.
- 2-No. 4 Cincinnati vert., s. p. drive.
- 1-No. 2 B hvy. pl. B. & S., s. p. dr.
- 2-No. 1 Y Brown & Sharpe.
- 1-No. 3 B. & S. vertical, s. p. drive.
- 1-No. 10 Pratt & Whitney, hand.

GEAR CUTTERS AND HOBBSERS.

- 1-48" No. 4 Brown & Sharpe auto.
- 1-No. 13 B. & S. spur and bevel.
- 1-No. 6 Lees Bradner auto.
- 1-36" No. 4 Cincinnati auto.
- 1-36" Fellows Gear Shaper.
- 1-24" Schuchardt & Schutte.
- 1-Ingle Tooth Rounder.

ENGINE LATHES.

- 1-12"x6' Reed.
- 1-20"x8' Morris.
- 1-16"x6' Pratt & Whitney.
- 1-14"x6' Lodge & S. patent head.
- 1-14"x6' LeBlond, quick change.
- 1-17"x8' Cincinnati.
- 1-20"x8' Lodge & Shipley, qck. ch.
- 1-20"x10' American, d. b. g., tap. att.
- 1-36"x12' Bradford standard.

BROACHING MACHINES.

- 3-No. 3 A Lapointe.

GRINDERS.

- 3-No. 70 Heald, internal.
- 1-10"x24" Modern.
- 1-No. 24 Bath, universal.
- 1-10"x50" Norton, plain.
- 4-10"x30" Landis, plain.
- 2-6"x48" Pratt & Whitney, plain.
- 1-12"x32" Landis, plain.
- 1-12"x24" Modern grinder.
- 1-10"x24" Landis, plain.
- 2-6"x32" Norton, plain.
- 1-14" P. & W. vertical surface grinder with magnetic chuck.

AIR COMPRESSORS.

- 1-13"x8"x12" Curtis vert. dbl cyl.
- 1-No. 0 Auto garage compressor.

MULTIPLE DRILLS.

- 1-4 Spindle Barnes, 22", b. g. & p. f.
- 1-4 Spindle Barnes sensitive.
- 1-3 Spindle sen., Taylor & Fenn.
- 1-No. 4 32-spindle Fox.
- 1-2 Spindle Allen sensitive.
- 1-5 Spindle Detroit sen. horizontal.

WRITE-WIRE-PHONE

Broadway Machinery Company
236-238 Broadway Cincinnati, Ohio

Grand Rapids Specials

Air compressors, 4½x5 Ingersoll-Rand. (2).
Boring mills, vertical. 34".
Drill, 26" Sibley, sliding head.
Drill, 28" Hamilton, sliding hd.
Drill, No. 2 Quint 6-sp. turret.
Elect. tool post grinder, No. 2 Willey, 110 v., 60 c., 3 p.
Gear cutter, 36" G. & E., spur
Grinder, Greenfield, cutter
Groover, No. 518 P S & W., pwr.
Hack saw, No. 1 Racine.
Hack saw, No. 5 Marvel
Hammer, 50 lb Little Giant pwr.
Hammer, Smith auto., power
Lathe, 16x8 Bogart standard
Lathe, 18x8 Greaves-K. standard.
Lathe, 18x10 Cinti. standard
Miller, No. 38 Chicago. hand.
Miller, No. 3 heavy, plain.
Millers, No. 1-C Fox plain, (2).
Miller, No. 25 Bilton plain.

Miller, No. 1½ Valley City plain.
Molding mch., portable, Arcade.
Presses, No. 2 Consolidated inclinable, (2).
Press, No. 3 Consolidated incl.
Press, No. 10 Excelsior, foot.
Punch press, No. P-3 Ferracute.
Rolls, drawing & forming, Port Huron
Riveter, No. 0 Cleveland electric.
Rolls, power forming, No. 400 P S & W.
Roll fd. for D-3 Ferracute press.
Screw mch., 4" American, hand.
Setting-down machine, No. 564 P S & W power.
Shear, No. 16-P Len., throatless.
Shear, cir., No. 278 P S & W.
Turret lathe, 18" Prentice gd hd
Wall radial, No. 51 Canedy-Otto
Welder spot, No. 140 Toledo.
Welding outfit, acetylene.

Ask for Complete List

McMullen Machinery Company

"Everything in Shop Equipment"

Grand Rapids, Mich.

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of advertisers herein, won't you kindly remember to say somewhere in your communication that the inquiry comes from Hitchcock's Machine Tool List? Advertisers are human; they like to know that the medium in which they spend their money is received and consulted by machinery users. Not being mind readers, they can only know this when you tell them, and if you neglect to tell them, the Tool List is deprived of credit for the service it has rendered.

Tools in Stock

PRATT & WHITNEY 8 Spindle Multiple Drill,
Single Pulley Drive.

34" BARNES Sliding Head, Upright Drill, Bk. Gear.

28" CLEVELAND Sliding Head, H. S., Double Back
Gear Upright Drill.

25" CLEVELAND Sliding Hd., B. G., Upright Drill.

20" SILVER Stationary Head, B. G., Upright Drill.

20" SILVER Stationary Head, Wheel and Lever Feed
Upright Drill.

16" CLEVELAND Dbl. Sp., H. S., B. B. Sens. Drill.

14" ROCKFORD Sgl. Sp. Sens. Drills, Motor Driven.

4-Spindle BARNES Gang Drill, Automatic Approach
and Return, 20".

4-Spindle FOOTE-BURT 20" Rail Drill, Back Gear.

97"x32" bed Trip. Grd., Face Plate Dr. Engine Lathe.

Large stock of smaller lathes from 10" up.

20" KELLY Back Gear Crank Shaper, NEW.

20" SMITH & MILLS Geared Crank Shaper, USED.

16" KELLY Back Gear Crank Shaper, NEW.

15" KELLY Geared Crank Shaper, USED.

LENNOX Rotary Slitting shear, 72" tht., cap. $\frac{3}{4}$ " plate.

WANGLER Rotary Beveler, Cap. $\frac{3}{4}$ " plate.

SCULLY 6' Bending Rolls, pyramid type, drop end,
 $\frac{1}{2}$ " plate.

No. 1 LANDIS 10"x24" Universal Grinder.

No. 3 LANDIS 12"x42" Universal Grinder.

We have a large stock of other good NEW and
USED tools for immediate delivery.

We are interested in securing good used HORI-
ZONTAL and VERTICAL Boring Machines, Plan-
ers, Large Lathes, Radial Drills and SHEET METAL
MACHINERY.

Mail us specifications of what you have for sale

D. M. Osborne Machinery Co.

Salesroom: 221 St. Claire Ave., N. E., Cleveland, O.

Branch Office: 515 Putnam Bldg., Davenport, Iowa

Machine Tools Immediately Available

- One Kempsmith No. 3 Universal Milling Machine, new.
- One Kempsmith No. 3 Plain Milling Machine, new.
- One Brown & Sharpe No. 1 Plain Milling Machine, with spiral universal centers, universal spiral cutting attachment, pump, first-class condition, used.
- One No. 2 Milwaukee Plain Milling Machine, all feeds, cone driven, excellent condition.
- Two Gisholt 21" swing Turret Lathes, taper attach., excellent cond.
- One Fifield 30"x10' triple geared Engine Lathe, excellent condition.
- One Pratt & Whitney 24"x6' Planer, excellent condition.
- One Pratt & Whitney 30"x14' Planer, one head, excellent condition.
- One Chandler 36"x12' Planer with two heads, arranged for motor drive, high speed type, excellent condition.
- One Whitcomb-Blaisdell second-belt drive planer, 26"x8', two heads on the rail, new.
- One Bath Universal Grinder No. 2, 10x24, guaranteed practically new, complete equipment.
- One Ditto No. 24, complete equip., 10x36, guaranteed practically new.

Factory & Mill Supply Co.
137 Oliver St., Boston, Mass.

New Boston Show Rooms W. H. J. Fitzgerald & Co. 30 Oliver St., Boston

- 1 Foote-Burt Company No. 23 Heavy Duty Drill, 20" swing, single belt drive, capacity $\frac{3}{8}$ " to $1\frac{1}{4}$ ", guaranteed good as new.
- 2 No. 2 Warner & Swasey Turret Screw Machines, plain head, automatic chuck, bar feed, hand longitudinal feed to cut-off, with power feed to hexagon turret.
- 2 No. 1 Warner & Swasey Turret Screw Machines, plain head, automatic chuck, bar feed, lever feed to cut-off only, automatic chuck capacity $\frac{3}{8}$ ".

These machines are in A-1 condition.

Six $\frac{1}{4}$ Inch Automatic Screw Machines (Stehli Patent)

Each fitted with screw slotting attachment. Manufactured by Hartford Machine Screw Company. These machines adapted to the rapid production of all kinds of small screws, bushings, studs, etc. Condition, good as new.

Grinders

No. 16—12x72" Brown & Sharpe
Plain Manufacturing Grinder.

22x84" Pratt & Whitney Heavy
Vertical Surface Grinder with mag-
netic chuck and Generator.

No. 2 Gardner 3-Phase, 60 Cycle,
220 Volt Motor Driven Disc Grind-
er, with ring wheel chuck.

Electromobile Truck

3,000-lb. Capacity Electromobile
Shop Truck, with two four-wheel
wagon trailers and charging outfit.

Machinery Department

The

W. M. Pattison Supply Co.

Cleveland

Ohio

Prices that are Attractive

The Entire Equipment of Machine Tools and Supplies in the plant of The Dayton Metal Products Company is being disposed of by

The Biggs-Watterson Company

at prices that will interest you. Tools are of modern design, some only slightly used. All are offered subject to prior sale only.

Send for List

The Biggs-Watterson Company

38 South Jefferson St., Dayton, Ohio

Main Office: Cleveland, Ohio

Branch: Detroit, Mich.

Machine Tool Makers

should investigate carefully the facilities offered by **Hitchcock's Machine Tool List** for reaching this trade in all parts of the country. Its circulation is specialized to completely cover *every line of manufacture* in which machine tools are used—as well as all railroad and other tool-using shops—with a thoroughness and effectiveness not equalled by any other advertising medium.

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30—Engine Lathes, all sizes and types.

27—14" Fay Automatic Lathes.

6—No. 5-A Potter & Johnston Automatic Lathes.

8—No. 6-A Potter & Johnston Automatic Lathes.

10—2x26 Pratt & Whitney Turret Lathes.

8—Brown & Sharpe Automatic Spur & Bevel Gear Cutters.

7—National Acme 4-spindle Automatic Screw Machines.

14—16", 20" and 24" Shapers.

Planers, Milling Machines, Drill Presses, Screw Machines and general tool room equipment of all kinds.

The above is only a small part of our enormous stock. Write or wire us for quotations.

Riverside Machinery Depot
25 St. Aubin Ave., Detroit, Mich.
Telephone: Edgewood, 1582

NEW MACHINE TOOLS USED

Complete Lines Carried In Stock

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DRILLS

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*Inquiries from manufacturers and consumers
of MACHINE TOOLS respectfully solicited*

CARPENTER & WOODWARD, Inc.

233 BROADWAY, NEW YORK, N. Y.

Bennett Bargains

Planers

18-22-26 30-32-36-42-54-60" between housings; 1-2-3 and 4 heads.

Vertical Boring Mills

30", 36", 52", 76" and 10'

Horizontal Boring Machines

21", 3", 4"; also 5" Barret type.

Radial Drills

21", 3 and 6'—Plain and Universal.

Upright and Multiple Drills

12"-24"-36" and 42"; also 3 and 6 spindle.

Lathes

Various sizes from 16" to 102" swing, 6' to 40' beds.

Turrets

2x24", 20x6", 20" also 34".

Milling Machines

48x36x14' Ingersoll 4 heads; 20"x7' Brainerd.

36" Shaper; 54" Slotter.

Also Punches and Shears, Gear Cutters, Grinders,
Hammers, Presses, Cranes, Bolt and Pipe Machines

Advise us of all equipment you wish to purchase or sell

G. L. Bennett Machinery Co., Inc.

30 Church Street

New York City

ReMANUFACTURED - (ORIGINATED BY US) - MACHINE TOOLS

FOR QUICK SHIPMENT

At Chicago—The Great Machinery Center

PLANERS

- 1-24"x24"x 6' Hamilton.
- 1-24"x24"x 6' American.
- 1-26"x26"x 6' American.
- 1-26"x26"x 8' Gray.
- 1-30"x30"x10' Cincinnati, 2 heads.
- 1-36"x36"x10' Cincinnati, 2 heads.
- 1-36"x36"x13' Sellers Spiral, 2 hds.
- 1-36"x36"x17' Powell, 2 heads.
- 1-48"x48"x15' Sellers Spiral, 1 hd.
- 1-76"x48"x15' Woodward & Powell, 3 heads.

MILLING MACHINES

- 1-No. 14 Garvin Plain.
- 1-Garvin, Lincoln Type.
- 2-No. 32 Kempsmith, Lincoln Type.
- 1-No. 4 Cincinnati Plain.

BORING MACHINES

- 1-30" Bullard Vertical.
- 1-82" Niles Car Wheel Borer.
- 1-Beaman & Smith Horiz. Cylinder Boring and Milling.
- 1-6" bar Sellers Cylinder Boring and Facing machine.

RADIAL DRILLS

- 1-5' Universal.
- 1-5' Putnam.
- 1-5' Baush.
- 1-54' Baush.

GRINDERS

- 1-4"x20" Morse Plain.
- 1-6"x32" Norton Plain.
- 5-12"x74" Modern Plain.
- 1-No. 60 Heald Cylinder.

TURRET & SCREW MCHES.

- 1-12" Foster-Kimball.
- 3-16" Pratt & Whitney.
- 1-21" Gisholt Turret.
- 1-22" Steidle Turret.
- 6-24" Gisholt Turret.
- 1-24" Warner & Swasey Chucking.
- 1-24" Foster Turret.
- 1-14" Pratt & Whitney Screw.
- 1-14" American Screw.
- 2-2"x24" Jones & Lamson, Geared Head.

LATHES

- 1-13"x 5' Prentice.
- 1-13"x 6' Willard.
- 1-14"x 6' Rockford.
- 2-14"x 6' Flather.
- 1-16"x 8' Lodge & Shipley.
- 2-18"x 8' Lodge & Shipley.
- 1-20"x 8' American Production.

PRESSES, ETC.

- 1-36" wide Power Corrugating Roll.
- 1-96" Robinson Power Brake.
- 1-No. 2 Bethlehem Power Slitting Shear.
- 1-No. 2 Consolidated Incluable.
- 1-No. 3 Consolidated Incluable.

MISCELLANEOUS

- 1-4" Greiner Rotary Riveter.
- 1-74" Nutter-Barnes Cold Saw.
- 1-No. 525 Newton Steel Foundry Cold Saw.
- 1-Williamson Metal Band Saw.
- 1-24" Gould & Eberhardt Hobber.

Write for our Green List describing these and many others

HILL, CLARKE & CO. OF CHICAGO
649 W. WASHINGTON BLVD., CHICAGO, ILL.

New Machinery For Immediate Delivery

Arbor press, No. 3 Atlas.
Bench drills, Burke, several.
Boring, drill g and milling mch.,
No. 0 Giddings & L. horizontal.
Drills, 24" Hoefel, sliding head,
b. g., geared power feed, (2).
Drill, 28" Hoefel, sliding head,
back gear, geared power feed.
Grinder, pl. sur., No. 2 W. & M.
Hack saws, Peerless, several.
Lathe, 14x6 Walcott, d. b. g., q. c.
Lathe, 15x6 South Bend.
Lathe, 16x6 Walcott, d. b. g., q. c.
Lathe, 18x6 Walcott, d. b. g., q. c.

Lathes, 16x8 Walcott, double
back gear, quick change, (2).
Miller, No. 2 Kempsmith plain.
Miller, No. 1 U. S. hand.
Miller, No. B-1 Becker vertical,
power feed, rotary table.
Miller, No. 3 Becker vertical,
complete with rotary table.
Millers, hand, Standard Engine
Co., complete with pr. fd., (4).
Radial drill, Canedy-Otto.
Screw machine, No. 4 National,
geared friction.

Machines Set Up, But Never Used

Drills, 20" Excelsior, b. g., p. f., (4)
Drill, 20" Superior.
Drills, 20" Superior, back gear,
no power feed, (3).
Drill, 21" Superior, b. g., p. f.
Drills, 21" Hoefel, (5).

Grinder, No. 2 Bath.
Riveting machines, No. 4A High
Speed Hammer Co., (3).
Tapping chucks, style C Erring-
ton, cap. 3", auto. reverse, (10).

Used Machines for Immediate Delivery
2" to 2 1/2" Model A Cleveland automatic.

Used Wood-Working Machines

Box board matcher, p. f.
Molder, inside, No. 94 Berlin.

Surfacer, 24" Falls Undercut.
All in excellent condition.

**The H. A. Smith Machinery Co. 501-505 East Water St.,
SYRACUSE, N. Y.**

Second-Hand Wood-Working Machinery

For a large list of used wood-working machinery, consult the **Wood-Working Machinery List**, a publication similar to this but devoted to the advertising of saw-mill and wood-working machines. A copy may be had on application to the publisher, **A. H. Hitchcock, 1220-1235 Caxton Building, Chicago, Ill.**

Good Used Tools

BORING MACHINES.

2-spindle Moline adjustable center cylinder borer.

DRILLING MACHINES.

1-spindle Henry & Wright ball bearing sensitive, 24 swing.
2-sp. Taylor & Fenn manufacturing.
3-sp. Taylor & Fenn manufacturing.
4-spindle 14" Foote-Burt.
4-spindle 26" Barnes sliding head gang drills 3 jaw chucks (2).

6-spindle Gardam.
14-spindle No. 0 Fox.
25" Blaisdell sliding head drill.
28" Snyder, sliding head, (2).
23" Rockford sliding head, 1" chuck fitted
10" Barnes sensitive, (3).

GRINDERS.

10x48 Pratt & Whitney plain.
No. 2 Oakley univ. cutter and tool.
No. 11 Landis plain.
BX Yankee tool grinder.
12x60 Landis universal.
No. 11 Rivett, oscillating.
No. 6 Bryant internal.
48"x8" Springfield surface.

"H" Point Yankee twist drill.
No. 1 Cinn cylinder and internal grinding attach Surface and gear 4" cutter grinding attachment
6x32 Norton.
No. 1 Hartford auto. surface.
No. 5 Rivett radial grinder

LATHES.

14"x6" Prentice Brothers compound rest.
16"x6" Porter, 5-step, pl. rest, p. c. f. special draw-in chuck.
16"x7" Lehmann.
16"x8" Cincinnati, d. b. g. quick change gears.
16"x8" Lodge & Shipley, q. c., 5-step taper att.
18"x8" Perkins.

18"x8" Reed.
17"x8" Hamilton, 5-step, c. r., p. c. f., 14" h. s.
20"x12" Fifield.
22"x6" Beaman & Smith.
26"x12" Putnam, d. b. g., c. r., (2).
30"x10" Gleason, plain rest, power cross feed
38"x20" New Haven.
56"x24" Wood Light.

MILLING MACHINES.

No. 3 Fox plain power feed.
No. 14A Garvin plain, (5).
No. 14 Garvin plain, (7).
Rivett swivel miller.
No. 3 Van Norman duplex.
No. 12 Brown & Sharpe manufacturing miller.
12" Cincinnati plain mfg.

Grant manufacturing.
No. 2 Pratt & Whitney, Lincoln miller.
No. 2 Brown & Sharpe vertical, 20" circular att., power feed.
No. 3 LeBlond plain, all power fds., geared feed box.

SCREW MACHINES.

14" No. 54 National Acme auto.
20x7 Fay & Scott, turret.
24" Gisholt, turret.
4" style "A" Cleveland auto., (2).
2" Cleveland automatics, (22).
4-sp. National Acme automatic, with stock stand.
24" Davis turret chucking lathes, set-over turret, friction grd. head, p. f. 4" belt, 2 1-16" h. s.

No. 5A Potter & Johnston auto. chucking machine
No. 1 W & S hex tur lathes, fric. b. g. hd., auto chuck and roller fd
" Rivett, wire feed.
" Pratt & Whitney.
" National Acme automatic.
14" Rivett, plain turret.
No. 1 Brown & Sharpe, hand feed, (2).

GEAR CUTTERS.

26x10 Cincinnati.

No. 2 Whiton.

MISCELLANEOUS.

Brake, 4' Ohl, double cam.
Keyseater, No. 1 Davis.

Pinion cutter, No. 1 Slate.
Wire straightener, No. 1 Shuster.

Henry Prentiss & Company, Inc.

Singer Building, New York

Formerly Prentiss Tool & Supply Company

You'll Find Lynd-Farquhar's Used Equipment

A Little Better Than The Average

Here are a few desirable machines from
our large stock:

Radial Drills

Gang 2½' plain, with tap. att.
Bickford 3' plain, cone drive.
Prentice 36" radial drill, single pul.

Planers

Powell 42" x 38" x 8', belted 2 sides.
Pratt & W. 40" x 40" x 14', 2 hds.
Pratt & W. 52" x 52" x 20', 2 hds.

Screw Machines

Brown & Sharpe No. 0 auto.
Brown & Sharpe No. 00 auto.
Southworth No. 2 hd., 1" cap.

Miscellaneous

New Haven 18" x 10' lathe cr.
American 15" crank shaper.
Hendey No. 2½ Lincoln type miller.

LYND-FARQUHAR COMPANY

"Machine-Tool Values"

Boston, Massachusetts

17 Hydraulic Presses

from 1500 tons down to 18 tons,
large platens and small platens,
long stroke and short stroke

Several Pumps belted and one steam driven.

100-h. p. Motors, High Tension, 2200-v. A. C.

150-h. p. Motors, High Tension, 2200-v. A. C.

75-h. p. Motors, 250-v. A. C.

55-h. p.—50 h. p.—35 h. p.

25-h. p. Motors, 220-v. A. C.

2 Air Compressors.

2 Large Blowers.

Rack Driven Press, 40" stroke.

Large Crank Press, 24" stroke.

1½, 2 and 3" Cleveland Automatic Screw Machines.

Machinshop Equipment Corp'n

170 Oliver Street,

BOSTON, MASS.

Exceptional Machinery Bargains

Furnace Outfit

- 1—Tate & Jones Single End Angle Heating Furnace; cast iron construction chamber 2' 6" wide, 15' 3" long, with four No. 60 oil burners with funnels and yokes.
- 1—Pumping System and 1—3000 Tank for above.
- 1—Bending Floor 10' x 20'.

Grinders

- 1—No. 2-A Landis 16x32 Universal Grinder.
- 2—No. 11 Brown & Sharpe Grinders.
- 1—No. 1, 2 and 3 Woods Univ. Tool and Cutter Grinders. complete (new).
- 2—No. 1 Grand Rapids Universal Grinders (new).
- 1—C2T Grand Rapids Drill Grinder, capacity 1/2 x 2 1/2 drills (new).
- 1—6x32" Norton Grinder.

Millers

- 1—No. 3 LeBlond Plain, d. b. g., 3-step cone, heavy duty.
- 1—No. 3 Cincinnati, d. b. g., 3-step cone type.
- 1—No. 1 1/2 Kearney & Trecker, plain, motor dr., with 5 h. p. 230-v., d.c. motor.
- 2—No. 1 1/2 American Plain Millers (new).
- 2—No. 2 Rockford Universal Millers (new).
- 2—No. 0 Bickett Vertical Profilers and Millers (new).

Lathes and Turrets

- 1—24" x 14' Thayer & Houghton (old style, but good).
- 1—Each new Sidney Heavy Duty 27", 25", 19", 17" and 15" swing, by 6', 8', 10' and 14' beds, all 3-step cone, d. b. g., q. c.
- 2—24" Gisholt Lathes, chucking equipment and taper attachment (modern).

Shapers

- 1—24" Gould & Eberhardt Back Gear Crank, with vise and c. s. (good).
- 1—16" Hamilton Crank Shaper, with vise and countershaft (good).
- 1—Each of 16, 20, 24" Ohio Crank Shapers, with vise and countershaft (new).
- 1—Each of 16, 18, 24" Hollingworth b. g. crank, with vise and c. s. (new).

Drills

- 2—24" Aurora, s. h., b. g., t. a., p. f., motor drive, with 2 h. p. 3-ph., 60-c. 220-v. motors.
- 2—21" Hoefler Stationary Head Drills.
- 2—24-28" Hoefler, s. h., b. g., p. f. drills.
- 1—No. 30 Natco 34-spindle Multi, with No. 2 Morse taper shanks.

Presses

- 1—No. 3-C Bliss straight side double crank.
- 1—No. 26 Toledo Inclined Geared Cam Drawing, weight 12,000 lb.
- 2—New Rockford Inclined Presses, Nos. 2 and 3.

Bulldozers

- Nos. 4, 5 and 6 Williams & White.

Welders

- 1—Butt Welders, National, 1/2 x 1/2" capacity, for 220-volt, 60-cycle.
- 1—Tire Welder, Long & Allstatter, capacity up to 3 1/2" x 1/2" tires.

Planers

- 1—26" x 8' David W. Pond, 2 heads on cross rail, 80% new.

Punches and Shears

- | | |
|---|--|
| 1—60" Hilles & Jones Horiz. Punch, capacity 3 1/2" holes thru 1" plate; weight 68,000 lb. | 1—25" Throat, Dbl. End, cap. 1 1/2" x 1 1/2" |
| 1—50" Throat, Sgl. End, cap. 2" x 1" | 1—24" Throat, Sgl. End, cap. 1 1/2" x 1 1/2" |
| 1—50" Throat, Sgl. End, cap. 1" x 1" | 1—19" Throat, Dbl. End, cap. 1" x 1" |
| 1—36" Throat, Sgl. End, cap. 2" x 1" | 1—12" Throat, Dbl. End, cap. 1" x 1" |
| 1—36" Throat, Sgl. End, cap. 1" x 1" | 1—7 1/2" Throat, Dbl. End, cap. 3/4" x 1" |
| | 1—6" Throat, Dbl. End, cap. 3/4" x 1" |
| | 2—6" Throat, Sgl. End, cap. 3/4" x 1" |

We also have over 500 other machines in stock for immediate shipment.

Send us your inquiries.

Wayne Machinery Company

Fort Wayne, Indiana

Branch Warehouse: 18 West 2nd St., Dayton, Ohio

New and used machine tools for sale or exchange in part or full payment for the larger tools specified below.

PLANERS—GOOD CONDITION—NOW IN USE.

2 Flatthers, 36"x36"x16", 2 hds. on crossrail. 1 Rockford 36"x36"x13" table, 2 hds. on crossrail, two side hds. and one extended head on separate housing. 1 Putnam very hvy. type, 42"x42"x11'6", 2 hds. on crossrail. 1 Niles 36"x36"x10" table, worm drive, 2 hds. on crossrail and 2 side hds. 1 Betts 34"x36"x9'6", one head on crossrail.

PLANERS—NEW—USED SEVERAL MONTHS.

1 Wilson 36"x36"x9" table, with two heads on crossrail, steel rack, bull gear and pinion. 1 Bickett 36"x36"x12" table, with two heads on crossrail, steel bull gear and pinion. 1 Simmons open side, 48"x42"x14" table.

SLOTTERS—GOOD CONDITION—NOW IN USE.

1 each, New Haven and Miles, 12" stroke; 1 Niles 20" stroke; all auto. feed.

SHAPERS—NEW—ONE YEAR AGO.

10 Cincinnati 20" stroke, power down feed to head. 1 Gould & E., used, 28" stroke, down feed to head, thoroughly overhauled. 1 Steptoe, used, 20".

LATHES—NEW—TWO YEARS AGO.

2 Harris Corliss 24"x14" bed, double back gear. 1 Harris Corliss 24"x12" bed, double back geared. 1 New Haven, triple geared, 36"x16", used, good cond.

DRILL PRESSES.

1 Fosdick Radial, square column, 30" arm, tapping attachment. 1 Prentice Radial, square column, 48" arm, gear box drive and tapping attachment.

MISCELLANEOUS.

1 Bement horizontal boring mill, 3" bar, 60" swing. 1 Cincinnati No. 2 univ. cutter and reamer grinder. 2 Double end Dallett rope drive drill presses for horiz. drilling, with extended base. 2 Straddle cranes for loading planers, cap. two tons provided with swivel casters; will carry work directly to planers with minimum handling and labor. 1 Lourie 5 ton hydraulic press, 24" between posts. Small lathes, milling machines and other tools.

Let us have your inquiries and we will buy or exchange for following tools, which must be of modern design and first class condition:

VERTICAL BORING MILLS.

1 each 60" and 84" with two heads on crossrail and one side head.

LATHES.

1-40"x30', triple geared, heavy duty. 1-48"x24' to 30', triple geared, heavy duty. 1-36"x20' to 24', triple geared, heavy duty. 2-24"x14', heavy duty, double back geared. 1-24"x12', heavy duty, double back geared. 1-24" to 30"x16" to 20" heavy duty boring lathe. 1-24"x8' chucking, two post turret.

PLANERS.

1-48"x14' to 16" table, two heads on crossrail and one side head. 1-60"x20', two heads on crossrail, two side heads. 1-48"x14' Dietrich & Harvey open-side, two heads on crossrail and one side head.

DRILLS.

1-Baush high speed multiple, 16 spindles, 1" capacity. 1-Baush high speed multiple, 12 spindles, 1" capacity. 1-Radial, 6' arm, with gear box drive and tapping attachment.

MOTORS.

4-25 h. p., a. c., two ph., 220 v.. 2-10 h. p., a. c., 220 v., single or double ph.

MISCELLANEOUS.

1 Hydraulic Press, 10 tons capacity, 36" between posts. 1 Universal cutter and reamer grinder, with internal grinding attachment, capacity 10 to 16" swing. 1 Universal milling machine, equal to No. 3 Cincinnati. 1 Bevel gear cutter or shaper, 24" diameter capacity, automatic. 1 Spur gear cutter, 24" diameter capacity, automatic. 1 Spur gear cutter, 48" diameter capacity, automatic. 1 Cold saw, 10" diameter capacity. 1 American hardening furnace, 12 to 16" door opening, complete with blower. 1 Case hardening outfit.

FOUNDRY EQUIPMENT.

1-25 ton capacity cast iron plant complete. 1 steel building for same. 1 steel building 55'x330', preferably with one side gallery and provision for crane runway from one wall, 34' span. 1-15 ton electric crane a. c. power 34' span. 1-25 ton elect. crane a. c. pwr. 34' span. Complete equipment for pattern shop.

All tools and equipment will be inspected before purchase

Lutz Company, Inc., Mark for Department A
31st & Gray's Ferry Road, Philadelphia, U. S. A.

Contract Work Wanted

This department is exclusively for the use of those desiring to secure contracts for anything in the line of foundry or machine work, including press work, dies, jigs, fixtures, gears, die castings, drop forgings, screw machine products, springs, bolts, nuts, rivets, etc. Advertisements are to be set with side headings as shown, and with such display as may be appropriate to the copy used. Rates: one-eighth page, per month, \$4.

Gauges, Jigs Dies, Tools and Light Machinery	The Model Tool & Gauge Co. 510 First Ave., West Haven, Conn. Quick deliveries on gauges, jigs, dies and tools. Light machinery built on contract. Send us your specifications. We shall be pleased to quote.
Dies Tools Special Machinery	Robbins, Gamwell & Co. Pittsfield, Mass. Accuracy and efficiency in gages, dies and special machinery, is our specialty.
Dies Pressed and Stamped Steel Parts	Alsteel Manufacturing Company Battle Creek, Mich. Accurate and durable dies, pressed or stamped steel parts, 10 gauge or lighter, are what we specialize in. Send for our estimates.
Gray and Malleable Iron Castings Die Castings	Lough Brothers 90 West Street, New York City Gray iron castings, one ounce to twenty tons. Malleable iron castings. Die castings in aluminum, tin and zinc alloys.
Dies Gauges Fixtures Special Machines	The Steber Machine Co. Established 1891 Utica, N. Y. Incorporated 1906 We have made a specialty of accurate work for the past 27 years.
Drop Forgings (All Kinds)	Bonney Vise & Tool Works, Inc. Allentown, Pa. Quick and Accurate Drop Forging and Finishing Good tools, good men, and good management insure precision and promptness. Investigate; when you know our facilities and our record you'll want our service.
Pressed and Stamped Steel Parts	Geuder, Paeschke & Frey Co. 1325-1700 St. Paul Av., Milwaukee, Wis. It will pay you to let us figure on such pressed, stamped or drawn metal articles or parts as you may require, be they made of steel, aluminum, brass or copper. Our 15-acre plant at your disposal. Get the benefit of our "Knowing how since '81." Send samples or blue prints for est.

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The "New Britain" Adjustable Shop Stool



Fixed or Portable. With Spring Back if desired.

If you ever sat all day on a stool too high or too low for comfort, you can realize how it will increase the efficiency of your workmen to furnish them with stools which each one can adjust to the height most suitable to himself and to the work in hand.

The "New Britain" Adjustable Shop Stool has a correctly shaped, comfortable seat made of wood, and has the weight and strength which make it indestructible.

The investment cost is low for the dividends in comfort, satisfaction and dollar-and-cents results.

Write for Bulletin No. 1204

The New Britain Machine Company

**"Shop Furniture
Originators"**



**New Britain,
Conn. U.S.A.**

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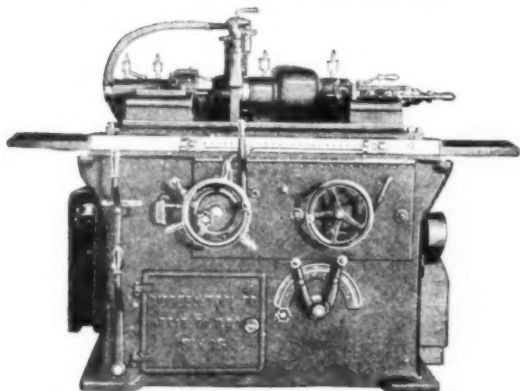
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"Modern" Plain Grinding Machines

Have a Rigid Self-Contained Drive



The type of drive provided for MODERN Plain Self-Contained Grinding Machines assures rigidity and smooth, precision grinding.

The concentration of all levers and hand wheels at the front of the machine assures quick, easy operation.

The main drive shaft runs at a constant speed; power is applied from line shaft to tight and loose pulley, or motor drive is optional.

All revolving pulleys, gears and shafts are completely guarded.

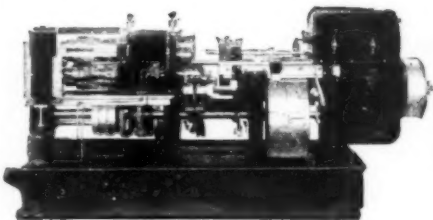
Economy of floor space, compactness and comparative simplicity of mechanism are notable points in MODERN construction.

Modern Tool Company

Main Office and Works, 2nd and Peach Sts.

Erie, Penna.

**For the faster machining
of castings, forgings and
second-operation bar work**



**"New Britain" Automatic Multiple Spindle
Chucking Machine, of the Work-Rotating Type**

There are six work-holding spindles and seven tool-operating positions—five end and two side. Work is performed on five pieces at the same time.

The work is rotated and may be operated on by both end and cross-slide tools simultaneously. It will perform at one setting a considerable variety of operations or the subdivision of a lesser number, in the time of the longest single operation or subdivision thereof.

Air pressure starts and stops the spindle and releases and grips the work. Equipped for hand chucking if preferred. Change gears provide a wide range of feed, threading and spindle speeds.

Write for Bulletin No. 956

The New Britain Machine Company

**Automatic
Screw and Chucking
Machines**



**New Britain,
Connecticut,
U.S.A.**

